webMethods CloudStreams 10.11 Readme

October 2021

This file contains important information you must read before using webMethods CloudStreams 10.11. You can find system requirements, user documentation, and installation and upgrade instructions on the Documentation website or the Tech Community website. At those locations, you can also find suite-related security and globalization information.

Included in this file is information about functionality that has been added, removed, deprecated, or changed for this product. Deprecated functionality continues to work and is supported by Software AG but may be removed in a future release. Software AG recommends against using deprecated functionality in new projects.

1.0 Critical Information

This section lists any critical issues for the current release that were known when this readme was published. For critical information found later, go to the Knowledge Center on the Empower website.

2.0 Known Issues

This section lists any issues for the current release that were known when this readme was published. For known issues found later, go to the Knowledge Center on the Empower website.

CloudStreams Server

- WST-5700
  In CloudStreams REST Provider APIs, the Interaction list API displays inappropriate error message for incorrect connector details.

  For Interaction list API, if users send REST connector details for SOAP Interaction list API, it displays error dump files instead of a correct message.

  Workaround: Do not provide REST connector details to SOAP interaction-related APIs and vice versa.

- WST-5703

  Request arguments associated with a mapper service are not listed as expected.

  In a mapper service, request arguments associated with a service are not displayed in a connector descriptor. As a result, users are unable to view the arguments from CloudStreams Development Plugin and users cannot provide the default input during design time from CloudStreams Development Plugin.

  Workaround: Update the connector descriptor manually.

- WST-5706

  While loading sandbox in the *Edit Connection page*, the following error message appears: "*OAuth token not valid"*. This issue is observed while editing the connection for *Adobe Enterprise Platform* connector.

  Workaround: Regenerate the access token and load sandboxes.

- WST-5707
  When users click the *Load* button multiple times, duplicate sandbox name is displayed. This issue is observed while editing the connection for *Adobe Enterprise Platform* connector.

  Workaround: Regenerate the access token and load sandboxes.

CloudStreams Development

- WCD-1921

  The table header that appears in the provider Refactor Preview screen gets blurred when the screen is resized.
  There is currently no workaround for this issue.

3.0 Usage Notes

This section provides any additional information you need to work with the current release of this product.

CloudStreams Server

- If Integration Server Microservices Runtime (MSR) docker image is built excluding the Web Services Stack, then CloudStreams does not work.
- CloudStreams provides a provision to call any Integration Server service in the start-up sequence.
- CloudStreams REST resource supports only one type of message builder and formatter for all response codes.
- CloudStreams does not support the RPC/encoded style WSDL.
- CloudStreams does not support the RPC/literal style WSDL.
- CloudStreams does not support sharing of Connector Virtual Services, Virtual Services, and Policies across nodes in a clustered setup. These artifacts should be manually deployed to a clustered node on need basis.
- CloudStreams SOAP services support sending an attachment through MTOM as a base64 encoded input. The support to wrap an attachment as a XOPObject type and sending large attachments is not supported.
- For SOAP based connectors, if the WSDL has multiple bindings for a given service, CloudStreams does not support changing multiple URLs dynamically to connect to the service endpoint.
- webMethods Mediator and CloudStreams products are not compatible. The products must be installed on separate webMethods Integration Server instances.
- While enabling a CloudStreams connector listener, if there are connectivity issues such as network and proxy issues while connecting to the streaming API endpoint, the listener automatically goes into retry mode and attempts to connect to the API endpoint until the configured connection timeout is exhausted. The connector listener inherits the timeouts (Connection TimeOut and Socket Read Timeout) from the connector connection. In case the timeout is set to a large value, the update

to the connector listener "enabled" status takes quite a while to reflect in the Integration Server Administrator. This may convey an impression to the user that nothing is happening. To confirm the processing, the user should check the server logs with "Streaming" logging component configured to *Debug* or above, or alternatively reduce the timeout values to speed up the "enabled" status update for the connector listener.

- If you disable a CloudStreams connector listener, a disconnect call is sent to the streaming provider. However, in the server logs, a META_CONNECT event is observed soon after the META_DISCONNECT event. This is because when a disconnect call is sent to the streaming provider, the provider server also wakes up the long poll that may be outstanding and replies with a connect message that may reach the client after the disconnect reply message. This is expected behavior.
- In a clustered set up, if a Terracotta server is down or unavailable for some reason, CloudStreams connector listeners will continue to function in a manner like a standalone set up.
- CloudStreams connector listener runtime error events will be handled by an error handler service, and an (optional) callback back service will be invoked with output of the error handler service to take further action based on the error handler result.

CloudStreams Development

- OpenAPI 3.0 unsupported capabilities are as follows:
    - CloudStreams does not parse the composed schema objects (allOf, anyOf, oneOf, and so on) from OpenAPI specification.

      For every composed schema object CloudStreams encounter while parsing the specification, the parser adds an empty object to the document(signature).

      Workaround: While executing the cloud operation for a given resource with a composed schema object in the signature, you can add the required fields under the empty object.
    - CloudStreams skips parsing the "Links" from the OpenAPI specification. These links do not impact the usage of resources.
    - CloudStreams does not have the provision to support the callback capability from OpenAPI specification. Hence, all the resources associated with callback are skipped. Once the parsing is completed, the list of resources that are skipped is shown in the warnings dialog.
    - The *request/response* schema with nested references adds the extra root in the signature and is not accepted by the backend. Hence, the OpenAPI specification with nested references may not work as expected with CloudStreams.
- CloudStreams Provider projects developed using the older plug-in, that is, v9.12 and earlier, cannot be migrated or upgraded to the v10.2 plug-in. You must create new projects.
- While creating a connector, if the connector ID contains dots (.), nested or hierarchical folders will be created. For example, if the connector ID is a.b.c.d.e.f.g, nested folders will be created named as a, b, c, d, e, f, and g. It is recommended to have as less dots as possible in the connector ID in order

to have a smaller hierarchical structure in the Package Navigator view in the Service Development perspective.

- While creating a connector using a Swagger file, authentication schemes are not parsed. You must add the authentication schemes after creating the connector.
- You will not be able to delete a provider package if it is published. You must first *unpublish* the provider package and then delete it.
- You will not be able to update the Resource Group reference if a provider package is published. You must first *unpublish* the provider package and then update the Resource Group reference.
- GET, PUT, POST, DELETE, and PATCH are the only methods supported while creating a REST resource. If you are creating a connector using a Swagger file, any other method available in the Swagger file will not be supported.
- To view the newly added assets, you must refresh the package from the Package Navigator view in the Service Development perspective.
- To import a Provider folder, if the Provider package is created on a different server, you must have access rights on that server.
- To import a published Provider package, *nsName* must follow the following namespace convention: <connector_id>.<service_name>. If this convention is not followed, the Provider package can still be imported, but a few functionalities might not work after import.
- Assignment from services is not removed from the Connector XML file when the service is deleted from a perspective other than CloudStreams Development. When Rest elements such as Parameters, Headers, Body, and Connection properties have assignments from a service and the service is deleted from a perspective other than CloudStreams Development, the user interface and the Connector XML file still show the assignments. These assignments will have to be removed (*Unassign*) manually.
- Adding or deleting a user will not reflect automatically on the "Run As User" list for a "Service Invocation" configuration on the "Event" tab of an already open listener node. The listener node must be closed and reopened to reflect the updated user list. Additionally, if the "Service Invocation" action has been configured to be applied on the incoming events and the configured "Run As User" user has been deleted, then the "Run As User" value has to be manually reconfigured.

4.0 Fixes Included in Each Release

This section lists the *latest fix level* that has been included in each release for each product component. A release is listed in this section only if changes occurred in that release. Go to the Knowledge Center on the Empower website for detailed information about fixes.

CloudStreams Server

Release 10.11

- WST_10.7_Fix1
- WST_10.5_Fix28
- WST_10.1_Fix10

Release 10.7

- WST_10.5_Fix24
- WST_10.3_Fix13
- WST_9.12_Fix11

Release 10.5

- WST_10.4_Fix6
- WST_10.3_Fix7
- WST_10.1_Fix10
- WST_9.12_Fix10
- WST_9.10_Fix14

Release 10.4

- WST_10.3_Fix4
- WST_10.1_Fix7
- WST_9.12_Fix8
- WST_9.10_Fix12

Release 10.3

- WST_10.2_Fix2
- WST_10.1_Fix8
- WST_9.12_Fix6

Release 10.2

- WST_10.1_Fix4
- WST_9.12_Fix5
- WST_9.10_Fix11
- WST_9.9_Fix6

Release 10.1

- WST_9.12_Fix3

Release 9.12

- WST_9.10_Fix4

Release 9.10

- WST_9.9_Fix2

CloudStreams Development

Release 10.11

- WCD_10.7_Fix1
- WCD_10.5_Fix5

Release 10.7

- WCD_10.5_Fix3

Release 10.5

- WCD_10.4_Fix3
- WCD_10.3_Fix4

Release 10.4

- WCD_10.3_Fix3
- WCD_9.12_Fix3

Release 10.3

- WCD_10.2_Fix1
- WCD_10.1_Fix2

- WCD_9.12_Fix2
- WCD_9.10_Fix4

Release 10.2

- WCD_10.1_Fix1

Release 9.12

- WCD_9.10_Fix2

5.0 Other Resolved Issues

This section lists the issues that were resolved in each release but were not part of the fixes listed in the previous section. A release is listed in this section only if changes occurred in that release.

CloudStreams Server

Release 10.11

- WST-5388

  2-way SSL for CloudStreams connection inline OAuth Token generation for Authorization Code flow and JWT flow was not supported. Currently, 2-way SSL access token generation can be achieved by setting global Keystore and Truststore. The user interface should accept user input for keystore details.

Release 10.7

- WST-4586

  Listener error handler service is invoked when it receives an error event, even though the error handler configuration is disabled.

Release 10.4

- WST-3895
  When a CloudStreams connection referenced by a CloudStreams connector listener explicitly references a proxy configuration, or when a default proxy configuration is available in Integration Server Administrator > Settings > Proxy Servers, and the configured proxy server throws a Basic Authentication challenge to the CloudStreams connector listener, the listener fails to enable.

  This issue is resolved.

- WST-3910
  If a user adds a custom header while updating the subscription details for a connector listener, CloudStreams Server ignores it and does not send it in the request.

  This issue is resolved.

- WST-3917

  Errors occur while applying OAuth v1.0a alias configurations from a source system to a target system. Because of the errors, OAuth aliases are not listed on the target system, which includes the newly created OAuth aliases. This is because update to the Access Token Secret of the respective OAuth aliases fails on the target system.

  This issue is resolved.

- WST-3918
  When a provider is selected in the Integration Server Administrator, CloudStreams page, the provider label text for the selected provider is not visible.

  This issue is resolved.

- WST-3921
  The "Notify Meta Channel Events" configuration option is available for a CloudStreams connector listener with the connection type defined as “Bayeux HTTP Long Polling” in the Integration Server Administrator, irrespective of whether the “Logging Invocation” action is configured. However, meta channel events are logged in the server log only if the “Logging Invocation” action is configured.
  This issue is resolved.

- WST-3925
  If a connector listener is enabled and the user deletes the actionable service from the Service Development perspective in Software AG Designer, CloudStreams does not notify that the actionable service is not available.

  This issue is resolved.

- WST-3930
  Subscription errors for connector listeners with "Bayeux HTTP Long Polling" connection type do not appear on the CloudStreams Administration page if the subscription has failed and the listener is enabled. The errors may be due to connection related issues, wrong subscriber configurations such as invalid or missing PushTopic name, missing or insufficient access permissions, or exceeding the concurrent user limit for the user or organization.

This issue is resolved.

- WST-3963

  "Enable Debug" option does not work for CloudStreams Streaming configuration.

  Enabling the "Enable Debug" option for the CloudStreams Streaming configuration does not log additional connectivity-related information in the server logs. This is because after upgrading the cometD client library adoption, the "Enable Debug" option can no longer be supported.
  This issue is resolved.

Release 10.3

- WST-3634
  Migration of CloudStreams user assets to v10.2 is not supported.
  The *pub.cloudstreams.migration:migrate* service does not migrate user assets to v10.2. The following error is observed when this service is run on CloudStreams v10.2 with a package containing assets created on an older version:
  "No CloudStreams migrator found for the package."
  This issue is resolved.

- WST-3646
  "SignatureDoesNotMatch" error appears while running an Amazon S3 cloud connector service. This error appears if the cloud connector service involves redirection and is created using AWS Signature Version 3.
  This issue is resolved.

- WST-3869
  CloudStreams is not able to handle the parenthesis in query parameters and the request call fails. CloudStreams Server is not able to encode the URI containing the parenthesis and due to this, requests are failing.
  This issue is resolved.

- WST-3884
  Cloud connector service execution fails while sending a JSON payload, which contains German characters. This is observed for back ends that use AWS Signature Version 4 for authentication.
  This issue is resolved.

Release 10.2

- WST-3269
  Multiple errors are observed while executing cloud connector services concurrently.
  For some SaaS back ends, errors such as "Read timed out" and "Premature end of Content" are observed while invoking cloud connector services at the same time. This issue is found in the Apache HTTP library, which is currently used in CloudStreams.

This issue is resolved.

- WST-3241
  Null JSON response is not supported by CloudStreams server.
  If a REST service returns Null as a JSON response, CloudStreams does not recognize or parse the Null JSON response.
  This issue is resolved.

- WST-3344
  CloudStreams Analytics dashboard does not display all the event records for a given date and time.
  In the CloudStreams Analytics dashboard, the grid in the Event tab does not show all the records for a given date and time. This is because MashZone NextGen considers date columns as dimension columns, as far as aggregation is concerned.
  This issue is resolved.

- WST-3352
  Provider charts in the API Usage tab of the CloudStreams Analytics dashboard also display data for inbound invocations.
  The provider charts should display data corresponding to the outbound (cloud connector service) invocations only. However, the charts also display data for inbound invocations, with the provider names being displayed as blank values.
  This issue is resolved.

- WST-3350
  Cloud connector services, which allow multiple operations/objects selection, do not persist duplicate operations/objects in the cloud connector service node.
  From v10.1, the CloudStreams server allows one resource/operation that can take/return multiple operations/objects in the request or response. For example, in the OData connector, you can select an operation as *changeset*, which allows you to select multiple operations/objects. For the *changeset* operation, if you select a combination of "create" and "Account" multiple times, even then it does not get stored in the cloud connector service node.
  This issue is resolved.

- WST-2819
  CloudStreams fails to parse a response when the response formatter/builder is configured as "binary", and the request Accept header is set to "application/json".
  When the response formatter/builder for a cloud connector service is configured to "binary", and the Accept header is configured to "application/json", CloudStreams fails to parse the resulting back end response.
  This issue is resolved.

Release 10.1

- WST-3213
  Issue while adding a custom field as document.
  Cloud connector service allows adding a custom field of type Document. When a custom field data type Document is added to a business object, and the field does not have any child fields, the field

appears as a string in the cloud connector service signature.
This issue is resolved.

- WST-3165
  CloudStreams fails to encode single quotes (') inside a querystring parameter.
  This issue occurs when you invoke back-end queries that have single quotes, to quantify certain entity values as part of the filtering criteria, and the criteria is a part of the query string parameter. For example, a query that returns details of an account object for a certain id match is as follows: *Select id from account where id = '84'*. This issue prevents encoding the single quote ('), resulting in service execution failure.
  This issue is resolved.

- WST-3165
  CloudStreams fails to encode single quotes (') inside a querystring parameter.
  This issue occurs when you invoke back-end queries that have single quotes, to quantify certain entity values as part of the filtering criteria, and the criteria is a part of the query string parameter. For example, a query that returns details of an account object for a certain id match is as follows: *Select id from account where id = '84'*. This issue prevents encoding the single quote ('), resulting in service execution failure.
  This issue is resolved.

- WST-3195
  CloudStreams does not throw a fault in case of a stream response, if the cloud connector service execution fails with client-side fault issues.
  CloudStreams does not throw a fault in case of a stream response if the cloud connector service execution fails with client side fault issues. Instead of fault, the service execution returns a response with a null body.
  This issue is resolved.

- WST-3192
  Error occurred while enabling the connection.
  While enabling the connection, the following errors are found:
  Error occurred while enabling the connection: null and *Connections alias already exist*.
  This issue is resolved.

- WST-2907
  Some of the alert messages shown in the CloudStreams Admin screens are not localized.
  The connectors enable, disable, and delete alert messages are not localized. The alert message shown while enabling the wire logging is also not localized.
  This issue is resolved.

Release 9.12

- WST-3149
  CloudStreams connector uses the default proxy server alias of Integration Server even if the default proxy server alias is disabled.
  Now CloudStreams does not use the default proxy server alias if it is disabled in Integration Server and skips the proxy route for a connection, if the host name of the connection Provider URL is present in the Integration Server "Proxy Bypass" list.
  This issue is resolved.

Release 9.10

- WST-2378
  CloudStreams does not support creating cloud connector services that have an array of JSON objects without the key/root in the request payload.
  In the absence of a parent root for the collection, it is not possible to represent the objects under the request payload. Because of this limitation, it is not possible to create or invoke services, which expect a root less array in the request payload.
  This issue is resolved.

- WST-2644
  Cloud connector services, which require mapping of parameters, fail to run.
  For a REST based connector, a parameter value cannot be assigned to another parameter by specifying a parameter-to-parameter mapping. This is because CloudStreams does not support parameter to parameter mapping.
  This issue is resolved. Parameter to parameter mapping is now supported.

- WST-2638
  CloudStreams is unable to handle excludeRoot properties in Request signature using XML.
  For a REST based connector that communicates in XML, if the “excludeRoot” option is set to “true”, then while sending a Request to the back end, CloudStreams is not able to exclude the root of the Request.
  This issue is resolved.

- WST-2639
  Cloud Connector service signature does not populate the picklist values.
  Cloud Connector service signature does not populate the picklist values even if the schema element has enumeration defined.
  This issue is resolved. Now cloud connector service signature field's picklist attributes are populated with enumerated values available from the schema.

CloudStreams Development

Release 10.4

- WCD-1739

When a connector listener is either enabled or unlocked for edit, the connector listener fields are disabled in the Service Development perspective in Software AG Designer. If multiple Actions are configured, the user is not able to select the Actions to view the details.
This issue is resolved.

- WCD-1747
  While creating a Schema type abstract object in a SOAP connector, the "Finish" button is not enabled after selecting the service on the "Assign services" page.
  This issue is resolved.

Release 10.3

- WCD-1593
  Multiple connectors having same IDs and located in different servers cannot be opened.
  This issue is resolved.

Release 10.2

- WCD-1318
  Server name changes when a new entry (user) is added to the Integration Server list.
  In Preferences > Integration Servers, adding a new Integration Server with a different user but with the same host name and port shows only one Integration Server.
  This issue is resolved.

- WCD-1341
  Errors observed while creating a connector if the connector name has spaces.
  This issue is resolved.

- WCD-1348
  Validation errors are observed while creating a connector from a Swagger file.
  While creating a connector using a Swagger file, validation errors are observed in certain cases where the name/id of a connector, resource name, parameter name, header name, and property name contains characters, which are not supported, for example, spaces or special characters in the name.
  This issue is resolved.

6.0 Documentation Changes

This section describes *significant changes* to the documentation, such as the addition, relocation, or removal of product guides, online help, chapters, or other major content. A release is listed in this section only if changes occurred in that release.

CloudStreams Server

Release 10.11

- The new *webMethods CloudStreams API Reference Guide* is added in this release. This guide describes a set of APIs that allow developers to programmatically integrate their own applications with CloudStreams in a simple and secure manner.
- In the *webMethods CloudStreams Connector Concepts Guide*, the *Managing Cloud Connections* chapter now contains three new sections, namely *Viewing Cloud Connection Status*, *Understanding Cloud Connection Status*, and *Understanding Cloud Connection State Transition*. The *Viewing Cloud Connection Status* section describes how to view the current status of the configured cloud connection for CloudStreams connectors from the Integration Server Administrator. The *Understanding Cloud Connection Status* section describes the behavior of cloud connection statuses for CloudStreams connectors in Integration Server Administrator. The *Understanding Cloud Connection State Transition* section describes how the status of a configured connection for a connector is determined and transitioned in Integration Server Administrator.

Release 10.7

- The *Cloud Connections, Services, and Connector Listeners* chapter which contains the section *Replaying Salesforce events* has been updated to include the changes for Replay Option. Now the Replay Option supports two more options that are, LAST_RECEIVED and CUSTOM.
- In the *webMethods CloudStreams Connector Concepts Guide*, the *Managing Cloud Connections* chapter now contains a new section *Testing Cloud Connections* that describes how to test the connections in the Connections screen.

CloudStreams Development

Release 10.11

- The *CloudStreams Provider Project* chapter now contains a new section named *Updating a Connector by importing a new Swagger or OpenAPI specification file (REST only)*. This section describes how to update an existing connector, which was created by using the Swagger or OpenAPI specification file option, by importing a new Swagger or OpenAPI specification file.

Release 10.7

- The *CloudStreams Provider Project* chapter that contains the section *Import Swagger specification file (REST only)* is now updated to *Import Swagger or OpenAPI 3.0 specification file (REST only)* to support importing Open API document.

- The *Building Cloud Connector Services* chapter that contains the section *Editing a Cloud Connector Service for a SOAP-Based Provider* is now updated to describe the two options to upload a WSDL file.

7.0 Terminology Changes

A release is listed in this section only if changes occurred in that release.

Release 10.7

Old Term	New Term
Enabled	Status
Yes/No	Enabled/Disabled

Release 10.2

Old Term	New Term
Login/Logout Sequence	Start/Stop Sequence
CFG Parameter	Internal

Release 9.8

Old Term	New Term
Group	Provider Group
Connector Package	Package
Plug-In Content	Connector Content

8.0 Added, Removed, Deprecated, or Changed Items

This section lists functionality, controls, portlets, properties, or other items that have been added, removed, deprecated, or changed. A release is listed in this section only if changes occurred in that release.

CloudStreams Server

Release 10.11

Added Item	Description
Lazy Asset Loading Option	In earlier releases, connection assets were initialized/enabled after restarting Integration Server or reloading a custom package containing the connection. Due to this, there was a delay in Integration Server bootup time as well as package reload time. From this release, we have introduced an option called *Lazy Asset Loading*. On enabling this option, you can defer the initialization of connection assets each time you restart Integration Server or reload the custom package containing the connection, except for the connections that are used in a listener. The deferred connection is enabled during its initial use. For instance, when you are using a cloud connector service, the corresponding connection is enabled, and only then the connector service is executed.
Connection Status for CloudStreams connectors	In earlier releases, CloudStreams did not have the provision to know the connection/ runtime status for a given connection. From this release, we have introduced a new connection runtime status called Suspended, which indicates a connection either waiting to be initialized or not having a valid token due to failure in the last refresh cycle. On clicking the *Suspended* option in the Status column, the details associated with the latest connection will be revealed. **Note**: Service execution failures because of invalid authentication or token will not impact the connection runtime status.

Added Item	Description
Option to configure/disable circular redirects of a connection	From this release, CloudStreams provides the ability to control the Circular Redirection of a connection. Allowing circular redirection for a connection indicates that redirects to visited endpoints will be allowed, up to a maximum number of redirects configured. Disallowing circular redirection for a connection indicates that redirects to visited endpoints will not be allowed and the execution will fail.
CloudStreams Public APIs	From this release, CloudStreams provides a robust set of APIs that allow developers to programmatically integrate their own applications with CloudStreams in a simple and secure manner. The APIs are based on the REST architectural style and can be communicated via HTTP requests. CloudStreams API is a beta feature for this release.

Changed Item	Description
Support for two-way SSL in OAuth 2.0 Access Token generation flows in connection	In earlier releases, CloudStreams connector did not have the provision for two-way SSL connection while generating the Access Token using Authorization Code Flow or JWT Flow. From this release, you could choose *SSL Connection*, if two-way SSL required, in the *Generate Access Token* flows while configuring a new connection or editing an existing connection.
CloudStreams User Interface	In the *Connections list* page, the *Enabled* column is renamed to *Status*. The status of a cloud connection for a CloudStreams connector can be one of the following: *Enabled*, *Disabled*, or *Suspended*. You can click on the label/link to check the runtime state transition summary for a connection and take a suitable action in the connection runtime status popup window.

Release 10.7

Added Item	Description
Support for replaying of events from the “Last Received” event or from a computed replay ID	In earlier releases, CloudStreams connector listener did not have a mechanism to replay all the events after the last received event and to replay all the events using a replay id computed by a custom service. From the release, all the events can be replayed after the last received event by CloudStreams within the retention window using the LAST-RECEIVED replay option. Also, all the events specified by a replayId that is computed by a custom service can be replayed using CUSTOM replay option. This option lets you point to any replay id in the old event stream. You must write a custom service adhering to the `wm.cloudstreams.listener.metadata.connection.specs:retrieveReplayIDSpec` and it maps the replayId to computedReplayID key
Support for testing a connection	In earlier releases, CloudStreams connector did not have the provision to test a connection while configuring a new connection. From this release, you can test the connection while configuring a new connection, editing an existing connection, or for those connections which are either enabled or disabled with disabled test function.
Workday - Multi Version Support	In earlier releases, CloudStreams Server supported a generic connector for Workday. From this release, CloudStreams Server supports defining version backend. Multi-version support is required for Workday because the Workday backend does not guarantee backward compatibility for its API interfaces.

Added Item	Description
Connection JWT (Service Account) Authentication Support in CloudStreams Adobe Experience Platform Connector	In earlier releases, CloudStreams Server had limited support for JWT (Service Account) Authentication. From this release, CloudStreams Server provides the ability to configure JWT or Service Account Authentication with Adobe Experience Platform. Additionally, it also maintains the validity of the authentication tokens by periodically refreshing the underlying tokens. The JWT authentication support provides a seamless connectivity experience with Adobe Experience Platform for the user.
Connection Field Lookup Support in CloudStreams Connectors	In earlier releases, CloudStreams Server did not provide any mechanism for populating the values of a connection configuration field directly from the backend. From this release, CloudStreams Server now provides the ability to configure lookup for any connection field with a possible list of values from the respective SaaS applications. The field lookup support provides ease of use for the end users to choose a value for a field rather than manually entering the same.
Connection Enhanced Logging Support for OAuth Refresh	In earlier releases, CloudStreams Server had limited logging for OAuth 2.0 refresh flow. From this release, CloudStreams Server supports enhanced logging and a separate logger facility for session management. A separate logger facility allows better control over the logs related to session management. A user can increase the logging level for this facility to capture additional logs while debugging session expiry issues besides turning on CloudStreams wire logging which requires an Integration Server restart to take effect.

Added Item	Description
Enhanced Listener Error Handling and Callback Support for CloudStreams Connectors	In an earlier release, CloudStreams Server introduced a limited and generic support for error handling and callback for connector listeners. From this release, CloudStreams Server provides the ability for a connector listener to attempt recovery for errors configured as recoverable in the associated CloudStreams connector. Additionally, CloudStreams Server provides the ability to configure a callback service which will be invoked with the error details in case of any errors. The error recovery support attempts to offer a seamless real-time integration experience for the user. The error callback support allows the user to take any desired action such as (disable connector listener, send email) based on the error reported.

Changed Item	Description
CloudStreams Connector Listener	In earlier releases, CloudStreams Connector Listener subscription status was displayed under the Enabled column as Yes or No under the Listener tab in the CloudStreams Administration user interface. From this release, CloudStreams Connector Listener subscription status is displayed under the Status column as Enabled or Disabled under the Listener tab in the CloudStreams Administration user interface.

Release 10.5

Added Item	Description
Support for handling listener runtime errors	In earlier releases, CloudStreams listener did not have a mechanism to notify or recover from unwarranted error events which can be handled for a SaaS provider. For example, Salesforce sends the *400::Authenticated user id does not match the session's user id* error, if an access token is invalidated or removed or the *"403::Unknown client"* error if a long-lived connection is lost due to an unexpected network disruption. From this release, an error handler service provided by the CloudStreams provider is invoked to handle the error events. The error handler service does the callback on a custom callback service provided by the user to take further action based on the error handler service output. Thus, user can ensure that the listener is fault tolerant by enabling the error handler and listener runtime errors are reported and appropriate action taken.

Added Item	Description
Field Lookup Support in CloudStreams Connectors	In earlier releases, CloudStreams connector listeners and connector services had the capability to show a list of value options from the backend for a field available in the header, parameter, or input signature. From this release, a Connector Developer can define lookups for a field available in the header, parameter, or input signature. This capability allows the CloudStreams Development UI to show a list of options from the back end to the end user for header, parameter, or signature field for which lookup is defined.
Server Name Indication (SNI) Support	CloudStreams Server now supports Server Name Indication (SNI) for Applications/Platforms websites. SNI allows multiple websites to exist on the same IP address. Without SNI, each hostname would require its own IP address for an SSL certificate to be installed. SNI solves this problem. CloudStreams now provides SNI supported connections with configurable parameters such as “Enable SNI” and “SNI Server Name”.
CloudStreams OAuth 1.0a Authentication Scheme Enhancements	CloudStreams OAuth 1.0a authentication scheme is now enhanced to provide support for realm and user specified signing algorithm.
CloudStreams Server support for MySQL CE 5.7 on Amazon RDS	CloudStreams Server now supports MySQL CE 5.7 on Amazon RDS instance, for persisting governance and analytics data.

Release 10.4

Added Item	Description
Support for multiple authentication schemes in a single connector	In earlier releases, while creating a connector, only one connection type or authentication scheme can be associated with a connector. As some SaaS application providers offer multiple authentication options to access their back end APIs, for example, Salesforce CRM v44, the connector developer needed to create a connector for each authentication scheme, for example, one connector for Basic authentication and another connector for OAuth 2.0 authentication. From this release, a connector developer can build a single connector that supports multiple authentication schemes. You can then select different connection types for the same connector and for the same back end from the connection configuration page in Integration Server Administrator.

Added Item	Description
Support for generating OAuth 2.0 Tokens while creating connections	In earlier releases, CloudStreams did not have the provision to generate Access Tokens required to configure the connection for OAuth 2.0 authorization. From this release, for some connectors, for example, Salesforce CRM v44, you can generate OAuth 2.0 Access Tokens while creating a new connection from the connection configuration page in webMethods Integration Server Administrator. You can generate OAuth 2.0 tokens using the Authorization Code Flow or the JSON Web Token (JWT) Flow approaches.
Clustering support for connector listeners	In earlier releases, CloudStreams connector listeners were not cluster aware. From this release, CloudStreams supports the use of clustering by either distributing the processing load for Streaming API events across Integration Server instances (Multi-Node mode) or limiting the processing to a single Integration Server node (Single-Node mode), while guaranteeing *exactly once* processing in each mode. CloudStreams leverages the distributed cache, which stores data in a Terracotta Server Array to coordinate processing of events between different Integration Server instances. The choice of a cluster support mode for a connector listener is predefined by the connector developer for a back end.
Support for Salesforce replay events	In earlier releases, CloudStreams did not have a mechanism to retrieve and replay lost events in case a SaaS provider sends those events. For example, Salesforce stores standard-volume events for 24 hours. So for versions later than 37.0 in Salesforce, you can now retrieve events if they are within the retention window. You can replay the lost events by selecting the appropriate replay option (ALL or NEW) on the Providers Listener configuration page in Integration Server Administrator.
Update/Upgrade Services Enhancements	The *pub.cloudstreams.admin.service:update* and *pub.cloudstreams.admin.service:batchUpdate* services have been enriched to update the Connector Services from a lower version of the connector API to a higher version having new features like inline connection and multi-part. Further, the new service *pub.cloudstreams.upgrade:batchUpgrade* service updates batches of CloudStreams connector service nodes and connector listener nodes from a lower version of the connector API to a higher version.

Added Item	Description
Migrate Services Enhancements	The *pub.cloudstreams.migration:migrate* service migrates old CloudStreams Connector services, connections, and connector listeners in custom packages that depend on the WmCloudStreams package, and updates them to be compatible with CloudStreams. The updated migrate service can migrate the Connector Service nodes which has new features like inline connection and multi-part.

Release 10.3

Added Item	Description
Support for streaming at the connector level	You can now use a CloudStreams connector to connect to streaming APIs. You can create a CloudStreams connector listener, select a subscription channel from a list of available channels for an endpoint, and configure the action(s) to be applied on the incoming events.
Support for dynamic/inline connection	You can now run a cloud connector service by passing connection details that are different than the connection details configured in the connection configuration page in webMethods Integration Server Administrator. The cloud connector service input signature is automatically updated based on your selections in the *Connection* panel.
Support for multipart/form-data request payload	You can now send a multipart/form-data payload which contains either a file, or text, or a document type to a service provider. The multipart/form-data payload is supported only at the request level, that is, only in the input signature.
Support for dynamic configurations with Microservices	CloudStreams now allows you to use a configuration variables template to externalize the configuration information and pass the configuration information to the Microservices Runtime at startup. By externalizing configuration information, a single Docker image created for a Microservices Runtime can be used across multiple environments, including different stages of the production cycle. The configuration variables template contains configuration properties that map to properties on the Microservices Runtime. The property values can be set externally in the template and then passed to the Microservices Runtime when it starts up. As part of the startup process, Microservices Runtime loads the information from the configuration variables template and replaces the configuration information stored in the file system.

Added Item	Description
Deployer support for large payload handling configurations and listeners	Deployer now supports deploying large payload handling configurations and connector level listeners.

Changed Item	Description
CloudStreams User Interface	Selecting a connector from a provider connector list under Integration Server Administrator > CloudStreams, now opens up a tabbed page display. The page defaults to the Connections tab which lists the connections configured for the selected connector. The newly introduced *Listener* tab displays the listeners configured for the selected listener. Additionally, the CloudStreams Administration pages in Integration Server Administrator now use a primary blue colour scheme, which is optimized for accessibility and for brightness.

Release 10.2

Added Item	Description
Changes in connection configuration fields	The following new connection fields are added: • Validate After Inactivity • Enable Compression The following connection fields are updated: • Hostname verifier* • Use Stale Checking** The following connection fields are deleted: • Element Character Set • Wait For Continue Time • Strict Transfer Encoding *The Hostname verifier field exposes the following closed set of updated options: • org.apache.http.conn.ssl.DefaultHostnameVerifier • org.apache.http.conn.ssl.NoopHostnameVerifier **The default value of *Use Stale Checking* has been set to *true*.

Added Item	Description
Support for large data configuration	Large data configuration enables CloudStreams to send and receive large binary streams over HTTP/HTTPS. If the new option *Handle Binary Streams* is enabled, then during outbound and inbound invocations, if the stream is greater than the *Threshold Size (bytes)*, the entire stream is not stored in memory. Threshold Size (bytes) is applicable only if *Handle Binary Streams* is enabled. Before enabling the large data handling capability of CloudStreams, configure the TSpace properties (watt.server.tspace.*) in the webMethods Integration Server Administrator.
MTOM	You can now transmit and receive binary content from SaaS providers in an optimized and efficient way using the Message Transmission Optimization Mechanism (MTOM).
Enhanced Concurrency Support	CloudStreams server now handles concurrent executions of cloud connector services in a more efficient way. This improves how parallel requests are handled without running into concurrency issues.
Enhanced server redirection capabilities	CloudStreams server now supports redirection capabilities with other HTTP methods like PUT and DELETE too. This allows interacting with back ends like AWS S3 for redirected data transfers across different regions and geographies.

Release 10.1

Added Item	Description
Support for form encoded parameter	You can now send simple key value parameters embedded in the Request Body for POST or PUT requests. This uses the default web form encoding, which is *application/x-www-form-urlencoded*.
Support for CloudStreams Analytics dashboard on MashZone NextGen instead of the legacy MashZone	You can now use the CloudStreams Analytics dashboard with Software AG Mashzone NextGen Server.
Support for deploying CloudStreams user-created assets using webMethods Deployer	You can now deploy CloudStreams user-created assets such as connections, connector services, and administrative assets or configurations such as oauth token, streaming provider, streaming subscriber and database settings that reside on source webMethods repositories to target webMethods runtime components (runtimes) using webMethods Deployer. You can deploy CloudStreams user-created assets in repository-based deployment only.

Added Item	Description
Support for Single or Multiple Operations and Multiple Business Objects with dependencies	Software AG Designer now displays different Business Object panels based on the following scenarios: • Single Operation has a single Business Object • Single Operation has multiple Business Objects • Single Operation has multiple Business Objects with dependencies • Multiple Operations have multiple Business Objects • Multiple Operations have multiple Business Objects with dependencies
Support for nested, hierarchical, or multi-level business objects	Software AG Designer now displays nested, hierarchical, or multi-level business objects if the resource is designed to support nested business objects. You can expand the nested business objects to display the child-level objects.
Support for NTLM basic authentication	CloudStreams now supports NT LAN Manager (NTLM) authentication protocol. CloudStreams provides basic support for NTLM authentication protocol using the credentials connection group. Limited support is available in this release.
Support for service signatures for back ends having very complex nested document structures	You can now create service signatures for back ends with extremely complex and deep signature structures.
Support for adding nested custom fields in the cloud connector service business object fields.	You can now add complex nested custom fields while selecting a cloud connector service business object field. This is useful for SaaS back ends where the metadata is dynamic, for example, Amazon DynamoDB.

Release 9.12

Added Item	Description
Support for Transport Layer Security (TLS) 1.1 and 1.2	CloudStreams now supports the latest versions of TLS standard v1.1 and v1.2. Using Java Secure Socket Extension (JSSE) based libraries, CloudStreams supports TLS v1.1 and v1.2 for outbound connections.

Added Item	Description
Wire logging message	If you now enable the Connection factory wire logging option from the CloudStreams > Administration > General screen in the Integration Server Administrator, a warning message appears. The message informs the side effects of turning on this setting.

Changed Item	Description
Regrouping between *Basic* and *Advanced* views and reordering of fields within the *Credentials*, *Transport Protocol*, and *Request Headers* connection groups.	Authentication Type field is now moved ahead of the Preemptive Auth field so that fields in the Basic view stay ahead of the fields visible in the Advanced view for the Credentials connection group. Element Character Set and Strict Transfer Encoding fields are moved to the Advanced view for the Transport Protocol connection group. Request Header Names and Request Header Values fields are moved to the Advanced view for the Request Headers connection group.

Release 9.10

Deprecated Item	Replacement, if any
Software AG MashZone based CloudStreams Analytics dashboard.	The Software AG MashZone based CloudStreams Analytics dashboard is deprecated from this release.

Changed Item	Description
CloudStreams User Interface	The HTML-based utility used to administer webMethods CloudStreams has a new look and feel. Menu and screen locations have not changed and there is no change in the User Interface functionality.

CloudStreams Development

Release 10.11

Added Item	Description
Update a connector using the updated OpenAPI/Swagger file	In earlier releases, you could create a connector by importing the Swagger or OpenAPI 3.0 specification file. From this release, CloudStreams provides the ability to update the connector, which was created using OpenAPI/ Swagger, using the updated OpenAPI/Swagger specification file.

Release 10.7

Added Item	Description
Support of workday dynamic WSDL	While configuring the cloud connector service, a new window “Upload WSDL File” is added in the edit option next to Operation field. This window will let you resolve the validation issues in the WSDL URL using the connection details configured and can get access to the WSDL content. If the validation fails while uploading the WSDL file, this window lets you upload the file using the two options: ▪ Provide URL for WSDL file ▪ Import WSDL file
Support for open API 3.0	A new import file option "3.0”is added in the “Import OpenAPI specification file” section. If you want to import a Swagger or Open API document, you can choose 2.0 or 3.0 respectively in the Version section.

Release 10.5

Added Item	Description
JWT Token Support	A new authentication type "OAuth V2.0 (JWT Flow)" is added in the authentications type drop-down list box. The connector developer can use this new authentication type while developing a connector for a SaaS application supporting the same authentication mechanism. Also, custom fields are added in the connection groups to add, edit, or delete new properties.

Added Item	Description
OAuth Token Flow Credentials Support	A new authentication type “OAuth V2.0 (Authorization Code Flow)" is added in the authentications type drop-down list box. The connector developer can use this authentication type to provide the capability to generate Access Tokens. Also, custom fields are added in the connection groups to add, edit, or delete new properties.

Release 10.3

Added Item	Description
Support for assignments on Cookies and Service Context	You can now apply assignments on Cookies and Service Context.
Support for applying assignments at the Resource Group level	You can now apply assignments at the *Resource Group* level, which enables you to apply assignments to each resource and operation in the selected Resource Group. Further, assignments are applied in the sequence they appear in the *Configure Assignment* panel.

Release 10.2

Added Item	Description
Change the sequence of assignments	You can now change the sequence of both local and global assignments. The assignments will be applied in the sequence they appear in the *Order* pane.
Support for Start and Stop sequences	You can now define optional Start and Stop sequences, which allow you to manage the connection behavior for both REST-based and SOAP-based providers. Start and Stop sequence is currently in BETA.
Support for moving and copying elements	You can now cut, copy, and paste request parameters, request headers, and response headers for REST-based connectors. For SOAP-based connectors, only request parameters can be currently moved or copied.
Enhanced provider package import process	Import process has been enhanced and allows you to import a provider package as an archive file or import the package from a workspace. Importing published packages is currently in BETA.
Refresh providers and connectors	Refresh button has now been added for enhanced usability to sync assets between the plugin and server for providers and connectors.

Added Item	Description
Support for Record type Parameter Formatter	You can now add record type parameter formatters. A new parameter style *Record (as Query)* has been added, which is a complex record structure representation, split into one or more query string parameters.

Release 10.1

Added Item	Description
Redesigned connector development plug-in	In this release, the *CloudStreams Provider Project* in the CloudStreams connector development plug-in has been redesigned and enhanced for better usability. **Note:** SOAP connector development is in BETA.

Deprecated Item	Replacement, if any
Old connector development plug-in	New connector development plug-in.

Release 9.12

Changed Item	Description
Icons updated to reflect changes in corporate branding.	Icons are updated in Perspectives, Views, Welcome screen, and About contributions.

Release 9.10

Removed Item	Replacement, if any
Redundant fields in REST service interface	**Serialization type** fields are removed from the Cloud Connector Service (REST) > Resource tab > **Request Processing** section. **Parsing type** fields are removed from the Cloud Connector Service (REST) > Resource tab > **Response Processing** section.

9.0 Added, Removed, Deprecated, or Changed Built-In Services

A release is listed in this section only if changes occurred in that release.

CloudStreams Server

Release 10.4

Added Service	Description
pub.cloudstreams.upgrade:batchUpgrade	This service updates batches of CloudStreams connector service nodes and connector listener nodes from a lower version of the connector API to a higher version.
wm.cloudstreams.listener.metadata.connection:registerExtension	This service registers cometd extensions in the process of listener enablement.

Release 10.3

Added Service	Description
pub.cloudstreams.admin.listener:enable	Enables an existing listener.
pub.cloudstreams.admin.listener:disable	Disables an existing listener. Also, disconnects the listener.
pub.cloudstreams.admin.listener:queryListenerState	Returns the current listener state (enabled/disabled) for a listener node.
pub.cloudstreams.admin.listener:listEnabledListeners	Returns a list of aliases for listeners in enabled state for a given connection alias.
pub.cloudstreams.admin.listener:update	Updates a CloudStreams connector listener node with a new set of inputs.

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WCD-WST-RM-1011-20211015