



**PUBLIC**

SAP BusinessObjects Business Intelligence Suite

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# **SAP BusinessObjects Live Data Connect Installation and Security Guide**

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# 1 Introduction

This document guides you through the installation of the SAP BusinessObjects Live Data Connect component for SAP Analytics Cloud.

## 1.1 What is SAP BusinessObjects Live Data Connect

If you are a BOE customer also using SAP Analytics Cloud, you can use SAP BusinessObjects Live Data Connect to bridge the two systems.

This is great way to leverage the investments and effort you have put into building your relational universes and BOE environment. SAP BusinessObjects Live Data Connect is a true hybrid experience, as it pulls data on demand from an on-premise BOE system so that you can manipulate them live in the cloud. The connection is live, which means no data is replicated to your SAP Analytics Cloud system. If your BOE system is installed in your corporate network, all the exchanges between SAP BusinessObjects Live Data Connect and your browser are contained within this network. This allows for better control over data privacy as nothing is passed on to the cloud.

## 1.2 What's New in SAP BusinessObjects Live Data Connect

This sections tracks the new features added to each version of SAP BusinessObjects Live Data Connect.

Version	What's New
3.3	<p>SAP BusinessObjects Live Data Connect 3.3 now supports:</p> <ul style="list-style-type: none"><li>• Scheduling of Live Data Connect based stories</li><li>• Variance calculations</li><li>• Drilling up and down on navigation paths in Web Intelligence documents</li><li>• In the query panel, elements that cannot be used for the query are greyed out</li><li>• Storing SAML shared secret in a file outside of the LDC main configuration file</li><li>• Reduction of LDC consumption of BI Platform licences, refer to the release notes SAP Note.</li></ul>

Version	What's New
3.2	<p>SAP BusinessObjects Live Data Connect 3.2 now supports:</p> <ul style="list-style-type: none"> <li>• Filters on measures in SAP Analytics Cloud for live data connections to Web Intelligence universes and documents.</li> <li>• Redirection to the load balancer or proxy URL when using saml authentication mode.</li> <li>• Increased logging activities thanks to improved auditing. SAP BusinessObjects Live Data Connect now has its own application identifier, and the set of events logged has been largely increased.</li> </ul>
3.1	<p>SAP BusinessObjects Live Data Connect 3.1 now supports Web Intelligence documents as a data source.</p>
3.0	<p>SAP BusinessObjects Live Data Connect 3.0 now ships as a standalone executable with an embedded application server. There's no longer need to deploy a dedicated Tomcat instance. The configuration is now centralized in a single location.</p>
2.4	<p>SAP BusinessObjects Live Data Connect now supports:</p> <ul style="list-style-type: none"> <li>• SAP HANA relational universes based on SAP HANA views with variables and input parameters.</li> <li>• Measures with aggregation type NONE.</li> <li>• Measure formulas using Like and GrandTotal SAP Analytics Cloud calculation functions.</li> </ul>
2.3	<p>SAP BusinessObjects Live Data Connect now supports Search To Insights (requires SAP Analytics Cloud 2020.04). Get more from your universes with natural language and get instant quality data using the power of Search To Insights.</p>
2.2	<ul style="list-style-type: none"> <li>• You can now select details or attributes in the Query Builder.</li> <li>• SAP BusinessObjects Live Data Connect is supported in Tomcat deployed when installing only the web-tiers with the SAP BI 4.2 setup.</li> <li>• SAP BusinessObjects Live Data Connect now supports universes using SSO for relational database authentication (also known as SSO2DB).</li> <li>• You can now display the Query Builder in full screen mode (requires SAP Analytics Cloud 2019.24).</li> </ul>

Version	What's New
2.1	<p>SAP BusinessObjects Live Data Connect now supports:</p> <ul style="list-style-type: none"> <li>• Ranking in stories (requires SAP Analytics Cloud 2019.14)</li> <li>• Threshold on measures (requires SAP Analytics Cloud 2019.14)</li> <li>• Aggregation in stories (requires SAP Analytics Cloud 2019.16)</li> <li>• For testing purposes, support of SAP authentication when connecting to the SAP BusinessObjects BI Platform.</li> </ul>
2.0	<p><b>New architecture for performance and stability</b></p> <p>The architecture has been enhanced and the servlet now runs queries for better performance and stability.</p> <p><b>Deployment mode and configuration file</b></p> <p>The configuration file has been modified. Some parameters have been renamed, and others have been added. Refer to <a href="#">this [page 15]</a> section for more information.</p>
1.0.7	This release was focused on stabilization.
1.0.6	This release was focused on stabilization.

Version	What's New
1.0.5	<p><b>Query as a Source (QaaS)</b></p> <p>Prior to the 1.0.5 version, SAP BusinessObjects Live Data Connect relied on relational universes for automatic SAP Analytics Cloud model authoring.</p> <p>The 1.0.5 release introduces query as a source, and supports contexts and relational universes (both .UNV and .UNX) with more than 150 objects. You now author SAP Analytics Cloud models using queries in the Query Builder, which allows for data manipulation before consuming the model.</p> <p><b>Query Builder</b></p> <p>In the Query Builder, you manipulate data and visualize objects before creating a model.</p> <p>Use drag and drop to select a subset of objects you want include in your model, and create a query specification. The query specification reflects the objects you have selected, and is the backbone of the model you consume in stories.</p> <p><b>Prompts</b></p> <p>As of this release, prompts are now part of the query specification used to create the model, and treated as variables by SAP Analytics Cloud.</p> <p>This means you answer prompts once before being able to create or open a story. Depending on the answers you provide, data is automatically and systematically filtered regardless of the objects that are part of the story.</p>
1.0.4	<p>SAP BusinessObjects Live Data Connect now supports:</p> <ul style="list-style-type: none"> <li>• Single Sign-On and SAML authentication</li> <li>• Management of incompatible objects</li> <li>• Complex prompts and LOVs at story time</li> <li>• Restricted and calculated measures</li> <li>• Multi-column LOVs</li> </ul>
1.0.3	<p>SAP BusinessObjects Live Data Connect now supports:</p> <ul style="list-style-type: none"> <li>• IsExcluding filter</li> <li>• Complex prompts and LOVs in models</li> <li>• Sorting in charts</li> </ul>
1.0.2	<p>SAP BusinessObjects Live Data Connect now supports reverse proxy configuration.</p>
1.0.1	<p>Create a remote model on a universe.</p>

## 1.3 About this document

This document provides SAP BusinessObjects Business Intelligence administrators with information, procedures and options for the installation of the SAP BusinessObjects Live Data Connect component for SAP Analytics Cloud.

This document doesn't cover the installation process of SAP Analytics Cloud, and assumes that you already have an SAP BusinessObjects Business Intelligence 4.2 SP6 (or higher) system installed.

## 1.4 Who is this document for?

This document is for SAP BusinessObjects Business Intelligence administrators that want to install the SAP BOE Live Data Connect component to leverage their existing SAP BusinessObjects Business Intelligence universes in SAP Analytics Cloud.

## 1.5 Terminology

The table below details the different terms used throughout this guide.

Term	Definition
SAP Analytics Cloud	Cloud analytics platform.
SAP BusinessObjects Web Intelligence	On premise ad-hoc reporting tool.
Universe	<p>A universe is a compiled file that includes all resources used in the definition of the metadata objects built in the design of the business layer.</p> <p>The universe is used by SAP BusinessObjects data analysis and reporting applications, where the business layer objects are visible for analysis and reporting.</p>
SAP BOE Live Data Connect component	Web Intelligence INA provider that exposes BIP universes to INA protocol consumers.
Query specification	An XML format stream that describes a query that can be executed on top of universes.
CMS	BIP repository which contains: users and their associated rights, universes, data source connections, Web Intelligence documents, and so on.
Connection Server	Connection Server provides a uniform and standardized access protocol, and a unified connection definition, for data sources that can be exposed through a relational model.

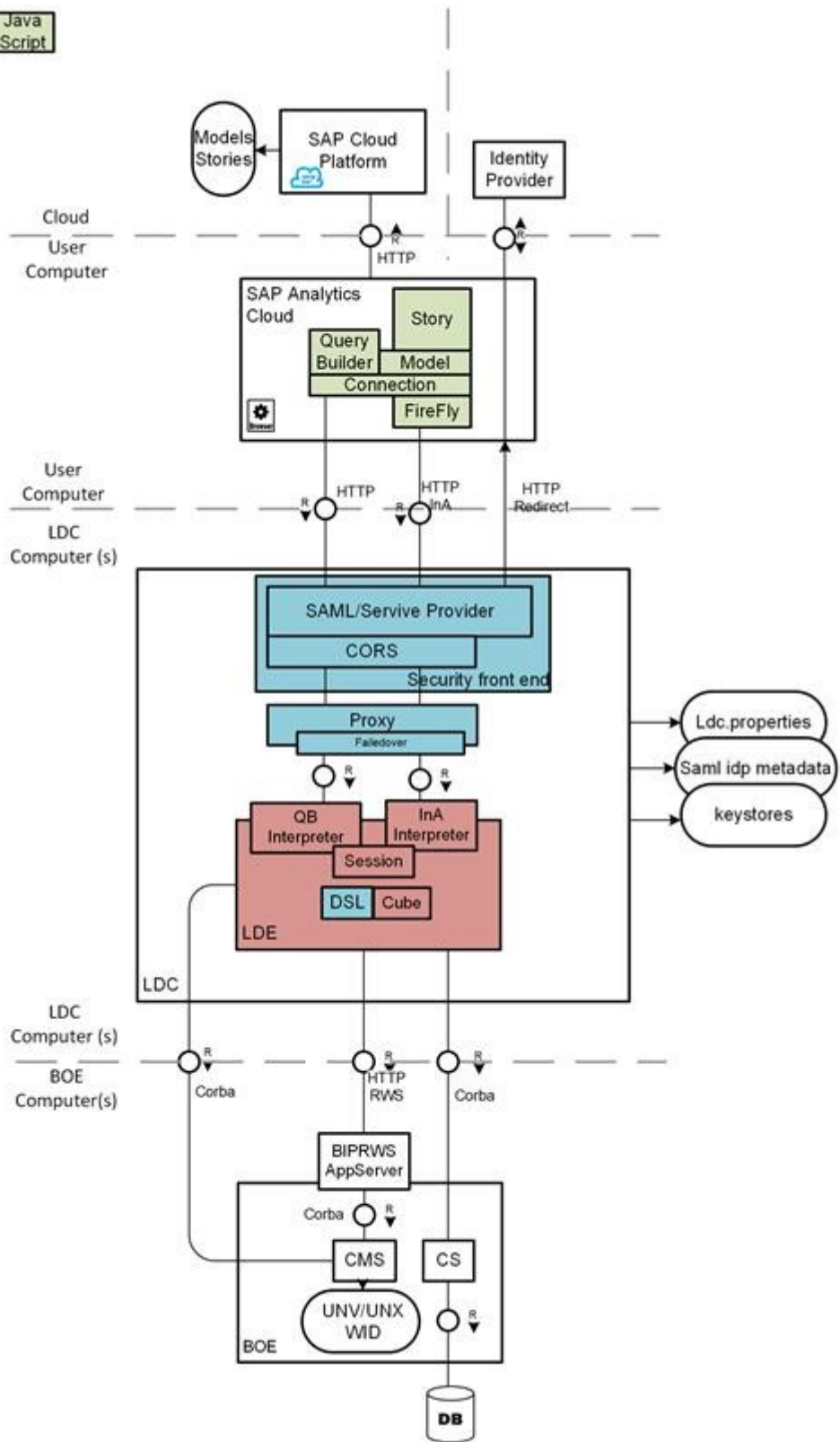


Term	Definition
Lightweight Data Engine (LDE)	A portable, stand-alone C++ REST service embedded with the servlet that exposes an InA service provider on top of BOE queries. It relies on a set of core classes shared with the Web Intelligence server to implement the calculation logic.

## 2 Architecture

The image below illustrates the architecture and different components of SAP BusinessObjects Live Data Connect.

JAVA C++ Java Script



# 3 Installing SAP BusinessObjects Live Data Connect

The following sections guide you through the installation of SAP BusinessObjects Live Data Connect.

## 3.1 Prerequisites

Make sure that you have the following elements before installing SAP BusinessObjects Live Data Connect for SAP Analytics Cloud:

- An SAP BusinessObjects Business Intelligence 4.2 SP6, 4.2 SP7, 4.2 SP8 or 4.3 system installed.
- An SAP BusinessObjects Web Intelligence license
- Microsoft Visual C++ 2015 Redistributable Packages.
- A signed SSL certificate in JKS format for the machine running SAP BusinessObjects Live Data Connect.
- One of the supported operating system listed below:
  - Windows Server 2012 R2
  - Windows Server 2016
  - Windows Server 2019
  - SuSE SLES 12 x86\_64
  - SuSE SLES 15 x86\_64
  - RedHat EL 7.7 x86\_64
  - RedHat EL 8 x86\_64
  - Oracle Linux 7.2 (RHCK) (UEK)
  - Oracle Linux 7.5 (RHCK) (UEK)
  - Oracle Linux 7.7 (RHCK) (UEK)

The Java Virtual Machine, the application server and the .war file are shipped as a standalone executable package.

## 3.2 Deploying SAP BusinessObjects Live Data Connect

### Prerequisites

If you're migrating to 3.x from a 2.x version, make sure to remove your existing servlet from your Tomcat. If that Tomcat instance was dedicated to SAP BusinessObjects Live Data Connect, delete it before installing SAP BusinessObjects Live Data Connect 3.0. Also, keep a copy of the `idp_metadata.xml` configuration file.

#### ⚠ Caution

As a best practice: Make sure that your BIP production system, with SAP BusinessObjects Live Data Connect deployed, is only accessible from a single SAP Analytics Cloud tenant. All data belonging to your system (log files, log entries, business data, configuration files, system details,...) shouldn't be visible or accessible from multiple tenants.

### Context

We recommend using SAML authentication if you plan on deploying SAP BusinessObjects Live Data Connect in production mode. For more information on how to set up SAML authentication, refer to the [Setting up SAML authentication \[page 20\]](#) section of the guide.

### Procedure

1. Download the zip file.
2. Unzip the file where you want to install SAP BusinessObjects Live Data Connect.
3. Run the executable to generate the default configuration files.  
You need to run the executable once to get the configuration files and configure them.
4. Configure the `ldc.properties` file using the [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#) section as reference.
5. Run the executable.
6. On Windows, deploy the SAP BusinessObjects Live Data Connect service. For more information, refer to [Running SAP BusinessObjects Live Data Connect as a Windows service \[page 24\]](#).

### Next Steps

If you're not able to launch SAP BusinessObjects Live Data Connect on Linux platform after the installation, refer to SAP Note [2954328](#).

## 3.3 Upgrading from 3.x to 3.3

### Context

If you're upgrading from SAP BusinessObjects Live Data Connect 3.x to 3.3, please follow the steps below.

#### i Note

In SAP BusinessObjects Live Data Connect 3.3, these parameters have been deprecated:

- `saml.boe.sharedsecret`
- `connector.https.keystore.password`
- `connector.https.key.password`
- `connector.https.truststore.password`
- `saml.keystore.password`
- `boe.restdskurl`

See [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#) to get the list of updated parameters.

### Procedure

1. If you're running SAP BusinessObjects Live Data Connect as a service, stop it.
2. Back up the `conf` folder and the `SecurityContext_Template.xml` file. You'll find it under `application/conf`.
3. Replace the SAP BusinessObjects Live Data connect installation folder content with that of the 3.3 zip file you've downloaded.
4. Launch SAP BusinessObjects Live Data Connect with the command prompt to check that it runs properly.
5. If you want to run SAP BusinessObjects Live Data Connect as a service, stop it via the command prompt, and start the service.

## 3.4 Configuring SAP BusinessObjects Live Data Connect

You can configure SAP BusinessObjects Live Data Connect using the dedicated `ldc.properties` file.

### Context

You'll find it under the `conf` folder, where the LDC executable is stored. For example, if the executable is stored in an `ldc` folder, the `ldc.properties` configuration file is located in `ldc/conf`.

The file is split in two sections: the first one lists all the mandatory parameters, and the second one lists the additional parameters available to fine-tune your installation. Each section is split into subsections according to the setting type.

You'll find all the parameters referenced below. Some parameters have been renamed. If you're migrating from a previous version, we've indicated the previous parameters' name when necessary.

#### ⚠ Caution

When editing file type parameter ending with the `.file` extension:

- Use the `/` character to separate folders, irrespective of the operating system
- Do not use quotes within or around file names, even if the file name has spaces.
- All paths can be relative to the `conf` folder, or absolute using `/` as a folder separator (applies to Linux and Windows platforms).

### Procedure

1. Open the `ldc.properties` file.
2. Edit the configuration file using the parameters referenced below.

#### i Note

Reserved characters must be prefixed to be interpreted correctly. For instance, `connector.https.keystore.password=John\Doe` means that the password is `John\Doe`. It's also possible to spread a password across multiple lines using `\n`. For example, `connector.https.keystore.password=line1\nline2`.

## BOE and Web Intelligence Settings

Parameter	Description	Mandatory
<p><code>boe.nameServer</code></p> <p>If there's an error, use the cluster name value. You'll find it in the Central Management Console, under <a href="#">Settings &gt; Cluster</a>.</p>	<p>Name server host and port defining the system to connect to. If your CMS repository is running on a different machine than the one running the REST Web Services, use this parameter to set the server and port used by the CMS repository.</p> <p>This parameter must point to a CMS. If the BOE deployment is clustered, make sure that <code>boe.nameServer</code> points to the CMS you want to use for Live Data Connect access.</p> <p>For more information, see .</p> <p>For more information, refer to the <a href="#">Business Intelligence Administrator Guide</a>.</p>	Yes
<p><code>boe.authenticationMode</code></p>	<p>BIP authentication mode. Possible modes are:</p> <ul style="list-style-type: none"> <li>◦ <code>saml</code> (Find out more about SAML authentication <a href="#">here [page 20]</a>).</li> <li>◦ <code>secEnterprise</code>, for enterprise authentication.</li> <li>◦ <code>secSAPR3</code>, for SAP authentication.</li> <li>◦ <code>secLDAP</code></li> </ul> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p><b>⚠ Caution</b></p> <ul style="list-style-type: none"> <li>◦ <code>secEnterprise</code>, <code>secSAPR3</code> and <code>secLDAP</code> use basic authentication. We recommend using them for testing purposes only, and strongly advise to use SAML authentication in production.</li> <li>◦ <code>secWinAD</code> authentication mode isn't supported.</li> </ul> </div>	Yes
<p><code>boe.clientType.cuid</code></p> <p>Previously known as <code>boe.clientType</code></p> <p>Default value: <code>AZFkpRO4waBGvZNBt4R85YY</code></p>	<p>Identifies SAP BusinessObjects Live Data Connect session events in the auditing database of the BIP server. If you don't specify this parameter, the session is labeled as "Logon without Client ID" in the Central Management Console.</p> <p>By default, SAP BusinessObjects Live Data Connect sessions are labeled as "CustomApplication 1". You can change this name by using another CUID value among the ones listed <a href="#">here</a>.</p>	No
<p><code>boe.webi.category.cuid</code></p>	<p>The CUID of the category to which the search of Web Intelligence documents should be restricted.</p>	Yes
<p><code>boe.webi.includepersonalfolder.bool</code></p> <p>Default value: false</p>	<p>If set to true, personal folders are included when searching for Webl documents.</p>	No



## Server Settings

Parameter	Description	Mandatory
<code>connector.https.port</code> Default value: 0	The port for the LDC HTTPS server. If set to 0, the server is disabled. At least one server (http or https) must be enabled. The most common scenario is to rely on the https server. If you use the https server, set this parameter to an available port for the https server.	No
<code>connector.http.port</code> Default value: 0	The port for the LDC HTTP server. If set to 0, the server is disabled.	No
<div style="background-color: #e0e0e0; padding: 10px; border-left: 2px solid #0070c0;"> <p><b>i Note</b></p> <p>Communication between SAP Analytics Cloud and Live Data Connect must be secure using https. So, unless you are running Live Data Connect behind a reverse proxy which exposes https, Live Data Connect must be configured to expose https, and the parameter <code>connector.https.port</code> must be used</p> </div>		
<code>connector.https.keystore.file</code>	The path to the SSL keystore. Can be relative to the configuration directory.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.
<code>connector.https.keystore.password.file</code>	The password for the SSL keystore.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.
<code>connector.https.key.alias</code> Default value: None	Indicate the alias of the key to use if the keystore has multiple keys.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.
<code>connector.https.key.password.file</code>	The password for the key in the keystore.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.
<code>connector.https.truststore.file</code> Default value: None	The path to the SSL truststore. Can be relative to the configuration directory.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.
<code>connector.https.truststore.password.file</code>	The password for the SSL truststore.	This parameter is optional. Set it only if <code>connector.https.port</code> is greater than 0.

Parameter	Description	Mandatory
<code>connector.maxthreads</code> Previously known as <code>lde.maxThreads</code>	Maximum number of threads LDE can trigger. If set to 0, then there is no limit.	Yes
<code>connector.maxpostsize</code> Previously known as <code>lde.maxPostSize</code>	Max size of data posted to the LDE server	Yes
<code>engine.port</code> Previously known as <code>lde.port</code>	The port for the internal LDC C++ server	Yes
<code>engine.sessiontimeout</code> Previously known as <code>lde.sessionTimeout</code>	Timeout for the LDE sessions (in seconds).  The timeout starts after the last request to the servlet.  When the timeout expires, the BOE session logs off and the caches of both the servlet and BIP session are cleaned.	Yes
<code>engine.https.enabled.bool</code> Previously known as <code>lde.ssl.enabled</code> in the <code>server.xml</code> in version 2.4.  Default value: false	Enables SSL for the internal LDC server.	No
<code>engine.https.key.file</code> Previously known as <code>lde.ssl.key</code> in the <code>server.xml</code> in version 2.4.	The keystore for SSL for the internal LDC server.	Yes, if <code>connector.https.port</code> is greater than 0
<code>engine.https.certificate.file</code>  Previously known as <code>lde.ssl.certificate</code> in the <code>server.xml</code> in version 2.4.	The certificate store for SSL for the internal LDC server.	Yes, if <code>connector.https.port</code> is greater than 0
<code>engine.maxmemory.enabled.bool</code>  Default value: true	Enables or disables Live Data Connect memory protection mechanism. If enabled, the Live Data Connect server rejects new queries when it reaches its maximum allowed memory.	Yes
<code>engine.maxmemory.size</code> Default value: 6000 (in MB)	If memory protection is enabled, defines the maximum memory Live Data Connect may use.	Yes, if <code>engine.maxmemory.enabled.bool</code> is set to true.

## Security Settings

Parameter	Description	Mandatory
<code>cors.allowed.origins.urls</code>	List of allowed SAP Analytics Cloud tenant URLs for Cross-Origin Resource Sharing (CORS).	Yes
<code>saml.sharedsecret.file</code> This parameter replaces <code>saml.boe.sharedsecret</code> , as it separates sensitive information of the shared secret from the rest of the configuration	The path (absolute, or relative to the Live Data Connect <code>conf</code> folder) to a file containing the SAML shared secret between Live Data Connect and the BI Platform.	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code>
<code>saml.keystore.file</code>	The path to the keystore for SAML authentication. Can be relative to the configuration directory.	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code>
<code>saml.keystore.password.file</code>	The path to the file storing the SAML keystore password.	Yes
<code>saml.key.alias</code> Default value: None	The alias of the key to use in the SAML keystore.	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code>
<code>saml.key.password.file</code> Default value: None	The password of the key in the SAML keystore	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code>
<code>saml.idp.metadata.file</code> Default value: None	The path to the SAML IDP metadata file. Can be relative to the configuration directory.	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code>
<code>saml.loadbalancer.identitybase.url</code> Default value: None This parameter is optional.	Allows redirection to the proxy or load balancer URL if necessary when <code>saml</code> authentication is used.	No
<code>saml.signaturealgorithm</code> Default value: SHA256	Defines the signature algorithm to be used between LDC and the SAML identity provider.	Yes, if <code>boe.authenticationmode</code> is set to <code>saml</code> . Possible values are SHA1, SHA256, SHA512

## Log Settings

Please refer to [Activating logs \[page 25\]](#).

The following parameters are deprecated:

- `boe.restsdkurl`, previously known as `boe.restUrl`: This parameter is deprecated as of version 3.3. Connections to the BI Platform are now defined using the `boe.nameServer` parameter.
- `boe.authenticationMode.SAPR3.systemId`: This parameter is deprecated as of version 3.3. The value for this parameter is now read directly from the BI Platform.
- `boe.authenticationMode.SAPR3.clientNumber`: This parameter is deprecated as of version 3.3. The value for this parameter is now read directly from the BI Platform.

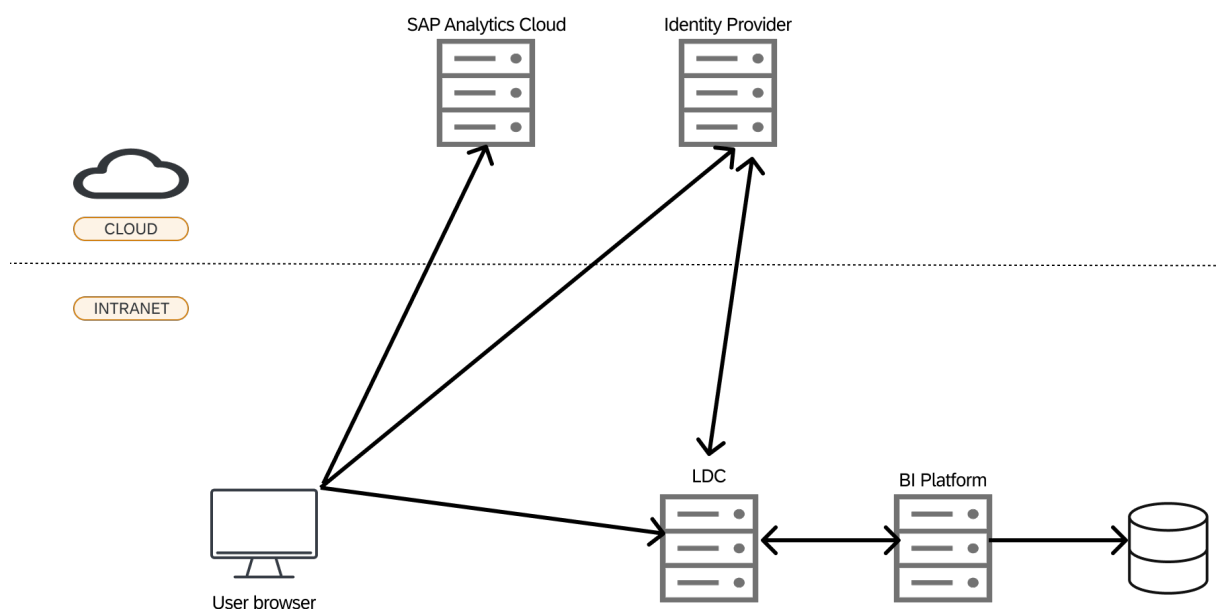
- `connector.https.keystore.password`: This parameter is deprecated as of version 3.3 and has been replaced with `connector.https.keystore.password.file`.
- `connector.https.key.password`: This parameter is deprecated as of version 3.3 and has been replaced with `connector.https.key.password.file`.
- `connector.https.truststore.password`: This parameter is deprecated as of version 3.3 and has been replaced with `connector.https.truststore.password.file`.
- `saml.boe.sharedsecret`: Previously known as: `lde.boe.sharedkey` in the `securityContext.xml` in version 2.4, this parameter is deprecated as of version 3.3 and has been replaced by `saml.sharedsecret.file`.
- `saml.keystore.password`: This parameter is deprecated as of version 3.3 and has been replaced by `saml.keystore.password.file`.
- `saml.key.password`: This parameter is deprecated as of version 3.3 and has been replaced with `saml.key.password.file`.

## 3.5 Setting up SAML authentication

This section describes how to configure SAML authentication when connecting to the SAP BusinessObjects BI Platform from SAP Analytics Cloud with SAP BusinessObjects Live Data Connect.

### Context

We recommend using SAML authentication to configure single sign-on between SAP Analytics Cloud and SAP BusinessObjects Live Data Connect data sources. The diagram below summarizes the interactions between the different components at stake.



SAML authentication requires handling of sensitive data, so setting it up requires trust between the different components and securing the different channels. The following steps must be followed:

- Activating trusted authentication in SAP BusinessObjects BI Platform: this enables the BI Platform to accept SAML tokens for authentication. A shared secret is also generated, and will enable trust between the BI Platform and LDC.
- Activating trusted authentication in SAP BusinessObjects Live Data Connect: this activated the code for SAML management in Live Data Connect and creates a secure channel to communicate with the Identity Provider. Activating trusted authentication in SAP BusinessObjects Live Data Connect: this activates the code for SAML management in Live Data Connect and creates a secure channel to communicate with the Identity Provider.
- Defining the trust between the Identity provider and SAP BusinessObjects Live Data Connect: this is the final step where this trust relationship will allow SAML tokens to circulate securely between SAP Analytics Cloud, Live Data Connect and the BI Platform.

## Next Steps

To continue the SAML authentication configuration, please read the next sections, [Activating trusted authentication in SAP BusinessObjects BI Platform \[page 21\]](#), [Activating trusted authentication in SAP BusinessObjects Live Data Connect \[page 22\]](#), and [Defining the trust between the Identity Provider and SAP BusinessObjects Live Data Connect \[page 23\]](#).

## 3.5.1 Activating trusted authentication in SAP BusinessObjects BI Platform

### Context

### Procedure

1. In the Central Management Console of your BIP system, click ► *Authentication* ► *Enterprise* ►.
2. In the *Trusted Authentication* section, check *Trusted Authentication is enabled*.
3. Click *New Shared Secret*.
4. Set a validity period using the Shared Secret validity Period (days) parameter.
5. Click *Download Shared Secret*.
6. Save the downloaded file on the computer where you installed SAP BusinessObjects Live Data Connect. In the `ldc.properties` file, set the `saml.sharedsecret.file` to reference the downloaded shared secret.

7. Click [Update](#).

## Next Steps

For more information on trusted authentication, refer to the *Enabling Trusted Authentication* section of the *Business Intelligence Platform Administrator Guide*.

## 3.5.2 Activating trusted authentication in SAP BusinessObjects Live Data Connect

### Context

### Procedure

1. In the `ldc.properties` file, set the `boe.authenticationMode` parameter to `saml`.
2. Generate a keystore. This keystore will be used to encrypt data exchanged between the BI Platform and Live Data Connect.
  - a. Run the following command to generate a new keystore:

```
<JAVA_HOME>/bin/keytool.exe -genkey -alias boe -keyalg RSA -keystore  
<PATH_TO_WEB-INF>/samlKeystore.jks -keysize 2048
```

- b. Run the following command to check the keystore validity:

```
<JAVA_HOME>/bin/keytool.exe -list -v -keystore <PATH_TO_WEB-INF>/  
samlKeystore.jks
```

- c. In the `ldc.properties` file, set or add the following parameters to reference the newly-created keystore:
  - `saml.keystore.file` (point to the created `samlKeystore.jks` file)
  - `saml.keystore.password.file` (store the keystore password in a file of your choice)
  - `saml.key.alias` (`boe` if you followed the instructions above)
  - `saml.key.password.file` (store the key password in a file of your choice)

## 3.5.3 Defining the trust between the Identity Provider and SAP BusinessObjects Live Data Connect

### Context

### Procedure

1. Download the SAML metadata of the Identity Provider (IDP) and save it in the `WEB-INF\classes\metadata` directory as `idp_metadata.xml`. Refer to the [SAP Cloud Platform documentation](#) to know how to download the SAML metadata.
2. Copy in the `conf` directory and reference it in the `ldc.properties` file using the `saml.idp.metadata.file` parameter, e.g `saml.idp.metadata.file = idp.metadata.xml`.
3. Restart SAP BusinessObjects Live Data Connect.
4. Go to `https://<HOST>:<PORT>/sap/boc/ina/saml/metadata` to download the metadata file.
5. Go to your IDP, create an application and upload the metadata file:
  - a. In the administration of the IDP, click **Administration and Resources** > **Applications** > **+ Add**.
  - b. Give a name to the application.
  - c. Click **SAML 2.0 Configuration**.
  - d. In the **Define from Metadata** section, click **Browse** and upload the metadata file you have previously downloaded (see step 4).
6. Click **Name ID Attribute** and select the attribute (**Login Name** or **User ID**) to map and match the `Account Name` property value of SAP BI Platform's users.

#### Caution

SAP Analytics Cloud and the SAP BI Platform have different user lists. This mapping enables Live Data Connect to login using the BI Platform user corresponding to the SAP Analytics Cloud user. So it must be performed for every SAP Analytics Cloud user that will be allowed to connect to the BI Platform through Live Data Connect. BI Platform user names are case sensitive, make sure your mapping respects case sensitivity. For more information, refer to [SAP Note 2876166](#).

## 3.5.4 SAML configuration review checklist

Your SAML configuration should now be complete.

Here's a list of the files you should now have on your machine:

- The shared secret from the BI Platform server

- The keystore to secure saml communications with the BI Platform
- The IDP metadata from the identity provider

Here's a list of the parameters that should be set up in the `ldc.properties` file:

- `boe.authenticationMode` set to `saml`.
- `saml.sharedsecret.file`, pointing to the shared secret file.
- `saml.keystore.file`, pointing to the saml keystore.
- `saml.keystore.password`
- `saml.key.alias`
- `saml.key.password`
- `saml.idp.metadata.file`, pointing to the IDP metadata file.

## 3.6 Running SAP BusinessObjects Live Data Connect as a Windows service

Running SAP BusinessObjects Live Data Connect as a Windows service allows it to run as a background service and restart automatically. You can use the service key parameter to deploy multiple LDC instances on the same host. Make sure your service key is meaningful, for example `LDCdev`, `LDCqa` or `LDCprod`.

You can run the commands below to install, run or stop the service:

- `LDC /install <service key>`: installs the service of the desired name which would be running LDC. The argument allows for multiple LUC services on the same machine. Each LUC service must be installed in a dedicated folder (sharing binaries between instances of LUC services is not supported).
- `LDC /remove <service key>`: removes the LDC service of the desired name. Before proceeding with the removal, the tool must check that the requested service is actually an implementation of a LUC service.
- `LDC /start <service key>`: starts the LDC service of the desired name. Before proceeding, the tool must check that the service is actually an implementation of a LUC service.
- `LDC /stop <service key>`: stops the LDC service of the desired name. Before proceeding, the tool must check that the service is actually an implementation of a LUC service.

## 3.7 Running SAP BusinessObjects Live Data Connect as a background process on Linux platforms

You can run scripts to have SAP BusinessObjects Live Data Connect running as a background process on Linux platforms. For more information, please refer to [2945783](#) .



## 3.8 Activating logs

You can activate logs to monitor the activity of the servlet.

### Context

SAP BusinessObjects Live Data Connect doesn't delete logs by default. We recommend redirecting logs to your own encrypted files system. For more information, refer to the *Security* section of the guide.

### Procedure

In the `ldc.properties` configuration file, set the `logs.level` and `logs.transaction.bool` parameters.

Log Settings

Parameter	Description	Mandatory
<code>logs.level</code>	The desired logging level. Possible values are: None, Low, Medium or High.	Yes
<code>logs.transaction.bool</code> Default value: false	Enables full transaction logging for analysis.	No
<code>logs.saml.bool</code> Default value: false	Enables or disables SAML logs traces	No
<code>logs.http.bool</code> Default value: false	Enables or disables jetty logs traces	No

### Results

Logs are generated in the `<LDC_INSTALL_FOLDER>/logs` folder.

### Next Steps

For more information on log files, please visit [this page](#).

## Related Information

[Security \[page 40\]](#)

### 3.9 Configuring Cross-Origin Resource Sharing (CORS)

SAP BOE Live Data Connect supports Cross-Origin Resource Sharing (CORS) requests.

#### Context

When deploying the component, you can configure CORS requests so that the browser accepts requests coming from the SAP Analytics Cloud server. It's a way to secure the component by making sure that you control what servers are accessing your BI system via the component. Note that if you are using a reverse proxy, you don't have to set up CORS.

#### Procedure

1. Open the `ldc.properties` file.
2. Set the `cors.allowed.origins.urls` parameter with your SAP Analytics Cloud tenant URL.

## 4 Setting up BI users for SAP Analytics Cloud

You have to set up rights and permissions in the Central Management Console to make sure that BI users are able to view universes and access their data in SAP Analytics Cloud.

As a best practice, we recommend that you create a dedicated folder containing all the BI universes exposed to SAP Analytics Cloud via the SAP BusinessObjects Live Data Connect component. We also advise you to create a dedicated group in which all users are given the specific Web Intelligence rights to create, save and delete documents in the folder containing the BI universes.

Also, make sure that users that are part of the group have viewing right on the universes and connections that you want to use in SAP Analytics Cloud.

### Related Information

[Giving BI users rights on Connection Server \[page 27\]](#)

[Giving BI users access to universes \[page 28\]](#)

[Giving BI users access to connections \[page 28\]](#)

[Checking user activation \[page 29\]](#)

### 4.1 Giving BI users rights on Connection Server

#### Procedure

1. Log in to the Central Management Console.
2. On the home screen, click *Servers*.
3. In the left pane, under *Service Categories*, select *Connectivity Services*.
4. In the list of servers, right-click `<Hostname>.ConnectionServer` and select *User Security*.
5. Select a user or a user group and click *Assign Security*.  
If the user or group is not in the list, click *Add Principals*, select a user or a group, add it to the *Selected Users or Groups* pane, and click *Add and Assign Security*.
6. Select *View* and add it to the *Assigned Access Levels*.
7. Click *OK*.
8. Repeat steps 5 to 9 for the `<Hostname>.ConnectionServer32` server.

## 4.2 Giving BI users access to universes

### Procedure

1. On the Central Management Console home screen, click *Universes*.
2. Select the *Universes* top folder in the folder structure.
3. Click the *Manage user security* icon.
4. Select a user or a user group and click *Assign Security*.  
If the user or group is not in the list, click *Add Principals*, select a user or a group, add it to the *Selected Users or Groups* pane, and click *Add and Assign Security*.
5. In the *Access Levels* tab, add *View* to the *Assigned Access Levels*.
6. In the *Advanced* tab, *Add/Remove Rights*.
7. Click **► System ► Universe**.
8. Grant the *Data Access*, *Create and Edit Queries Based on Universe*, and *View Objects* rights.
9. Click **► System ► Universe (information design tool)**.
10. Repeat step 8.

## 4.3 Giving BI users access to connections

### Procedure

1. On the Central Management Console home screen, click *Connections*.
2. Select the *Connections* top-folder in the folder structure.
3. Click *Manage user security*.
4. Select a user or a user group and click *Assign security*.  
If the user or group is not in the list, click *Add Principals*, select a user or a group, add it to the *Selected Users or Groups* pane, and click *Add and Assign Security*.
5. In the *Access Levels* tab, add *View* to the *Assigned Access Levels* column.
6. In the *Advanced* tab, click *Add/Remove Rights*.
7. Click **► System ► Relational connection**.
8. **Optional:** For SAP HANA universes, grant the *Data Access* and *Download connection locally* rights.
9. Click *OK*.

## 4.4 Checking user activation

Follow the steps below to make sure that users can use BI universes as a data source and create stories in SAP Analytics Cloud.

### Procedure

1. Open the BI launchpad.
2. Log in using the credentials of a user you have just set up.
3. Create a Web Intelligence document using a universe that you have exposed to SAP Analytics Cloud.
4. Create a query, run it and save the document in the user's personal folder.
5. Delete the document.

### Results

If you can do all these steps without any error, then the user has been properly set up and can access BI universes in SAP Analytics Cloud.

# 5 Setting up BI universes for SAP Analytics Cloud

Restrictions apply to universes that you want to use in SAP Analytics Cloud.

Make sure that universes you want to expose to SAP BusinessObjects Live Data Connect are relational. They can be multi-source.

## 5.1 SAP Analytics Cloud universe feature support

The table below details universe features that are supported by SAP Analytic Cloud.

Feature	Supported	Description
UNV	Yes	UNV are universe persisting file format created using SAP Universe Design Tool. This is legacy format.
RDBMS UNX	Yes	UNX are universe persisting file format created using SAP Information Design Tool. This is recommended format for RDBMS data sources.
OLAP UNX	No	UNX are universe persisting file format created using SAP Information Design Tool. This is recommended format for OLAP data sources.
Multisource universe	Yes	UNX universe built with multiple data sources.
Universe overloads	Yes	Capability in UNV to change universe behavior based on user.
Business Security Profile	Yes	Business Security Profiles are security settings of UNX defined on objects in the business layer.
Data Security Profile	Yes	Data Security Profiles are security settings of UNX defined on objects in the data foundation and on data connections.
Class	Yes	<p>A class is a logical grouping of objects within a universe.</p> <p>It represents a category of objects.</p> <p>The name of a class should indicate the category of the objects that it contains.</p> <p>A class can be divided hierarchically into subclasses.</p>

Feature	Supported	Description
Dimension or Object	Yes	<p>An object is a named component that maps to data or a derivation of data in the database.</p> <p>The name of an object should be drawn from the business vocabulary of the targeted user group.</p> <p>Parameters for analysis. Dimensions typically relate to a hierarchy such as geography, product, or time.</p> <p>For example "Last Name" and "City_Id".</p>
Detail	Yes	<p>Provide a description of a dimension, but are not the focus for analysis.</p> <p>For example Phone Number.</p>
Measure	Yes	<p>Convey numeric information which is used to quantify a dimension object.</p> <p>For example Sales Revenue.</p>
Predefined condition	Yes	<p>A condition object is a predefined Where clause that can be inserted into the</p> <p>Select statement inferred by objects in the Query panel. Filters can be applied by the final user or automatically if they are set as compulsory.</p> <p>Using condition objects has the following advantages:</p> <ul style="list-style-type: none"> <li>• Useful for complex or frequently used conditions.</li> <li>• Gives users the choice of applying the condition</li> <li>• No need for multiple objects.</li> <li>• Condition objects do not change the view of the classes and objects in the Universe pane.</li> </ul>
Predefined filter	Yes (in Modeler)	A ready to use filter.
BI set	No	Sets are sequences of related lists of values combined to create a complex query filters.

Feature	Supported	Description
@PROMPT	Yes	<p>You can use the @Prompt function to create an interactive object.</p> <p>A prompt can reference Static Values or Object LOV.</p> <p>A prompt can also contain default values.</p> <p>A prompt can also reference Index Awareness of an Object.</p> <p>Syntax:</p> <pre>@Prompt('message','type', [{'value1','value2',...}],class_nameobject_ name'],mono/multi,free/constrained/primary, persistent/not_persistent,'default value1:default key1',['default value2:default key2',...]))</pre>
Default prompt value (calculated or static)	Yes	Universe allows to define default value for prompt. Default values can be calculated or static.
@VARIABLE	Yes	<p>A variable can reference a Designer variable, or an existing Prompt or a new prompt with default parameters.</p> <p>Syntax:</p> <pre>@Variable('myname')</pre>
@WHERE	Yes	<p>You can use the @Where function to re-use the Where clause of another object.</p> <p>When the @Where function is used in the Where clause of an object, it specifies the path of another object in the universe as a parameter of the @Where function, in the form Class_Name\Object_Name.</p> <p>This then acts as a pointer to the Where clause of the referenced object.</p> <p>Syntax:</p> <pre>@Where(classname\objectname)</pre>



Feature	Supported	Description
@SELECT	Yes	<p>You can use the @Select function to re-use the Select statement of another object.</p> <p>When the @Select function is used in the Select statement of an object, it specifies the path of another object in the universe as a parameter of the @Select function, in the form Class_Name\Object_Name.</p> <p>This then acts as a pointer to the Select statement of the referenced object.</p> <p>Syntax:</p> <pre>@Select (classname\objectname)</pre>
@AGGREGATE_AWARE	Yes	<p>Aggregate awareness is the ability of a universe to make use of aggregate tables in a database. These are tables that contain pre-calculated data.</p> <p>You can use the @Aggregate_Aware function in the Select statement for an object that directs a query to be run against aggregate tables rather than a table containing non aggregated data.</p> <p>Using aggregate tables speeds up the execution of queries, improving the performance of SQL transactions.</p> <p>Syntax:</p> <pre>@Aggregate_Aware (sum (aggregate table1), ..., sum (aggregate tableN))</pre>
@SCRIPT	No	<p>Only used by Desktop Intelligence. Recovers the results of an executed script created in the Desktop Intelligence module.</p> <p>Syntax:</p> <pre>@Script ('variable', 'type', 'script name')</pre>
Alias Table	Yes	<p>Aliases are references to existing tables in a schema. An Alias is a table that is an exact duplicate of the original table (base table), with a different name.</p> <p>The data in the table is exactly the same as the original table, but the different name "tricks" the SQL of a query to accept that you are using two different tables.</p> <p>You can create aliases manually, or let Designer automatically detect potential aliases that will solve a join path loop.</p>

Feature	Supported	Description
Shortcut Join	Yes	<p>Shortcut joins in a universe represent an alternate path to improve performance of queries by not taking into account intermediate tables.</p> <p>Shortcut joins ensure that BusinessObjects generates SQL for each object combination rather than for each object.</p> <p>BusinessObjects uses shortcut joins when it can omit tables from a query and take a 'shortcut' between two tables that are not directly linked in a hierarchy.</p>
Hierarchy	Yes	<p>A hierarchy is in fact a navigation path.</p> <p>Designer provides a set of default hierarchies for multidimensional analysis.</p> <p>These are the classes and the objects arranged in the order that they appear in the Universe pane.</p> <p>Designer can also create a new hierarchy by creating a new folder in the Custom Hierarchies pane, then adding the appropriate dimensions in a hierarchical order.</p>
Context	Yes	<p>Contexts are a collection of joins which provide a valid query path for the QT to generate SQL.</p> <p>You use contexts to resolve join path problems such as loops and chasm traps.</p> <p>Depending on how you allow Web Intelligence users to use the objects defined on schema structures, contexts can lead to three types of queries being run:</p> <ul style="list-style-type: none"> <li>• Ambiguous queries</li> <li>• Inferred queries</li> <li>• Incompatible queries</li> </ul>

Feature	Supported	Description
Derived Tables	Yes	<p>Derived tables are tables that you define in the universe schema. You create objects on them as you do with any other table. A derived table is defined by an SQL query at the universe level that can be used as a logical table in Designer.</p> <p>Derived tables have the following advantages:</p> <ul style="list-style-type: none"> <li>• Reduced amount of data returned to the document for analysis.</li> <li>• You can include complex calculations and functions in a derived table.</li> <li>• These operations are performed before the result set is returned to a document, which saves time and reduces the need for complex analysis of large amounts of data at the report level.</li> <li>• Reduced maintenance of database summary tables.</li> <li>• Derived tables can, in some cases, replace statistical tables that hold results for complex calculations that are incorporated into the universe using aggregate awareness. These aggregate tables are costly to maintain and refresh frequently. Derived tables can return the same data and provide real time data analysis.</li> <li>• Derived tables are similar to database views, with the advantage that the SQL for a derived table can include prompts.</li> </ul>
Comments	Yes	<p>We are using comments in Join expressions or Objects definition to force the QT to use tables in the "from" clause.</p> <p>This is very useful for joins because there is no way to select the tables to participate in the "From" clause.</p> <p>Syntax:</p> <pre>/* TABLE1.COLUMN */ TABLE1.COLUMN = 'Constant'</pre>
Security Access Level	Yes	<p>Defines the security access level of the object.</p> <p>You can select a security level which restricts use of the object to users with the appropriate security level.</p> <p>You can assign the following security access levels:</p> <ul style="list-style-type: none"> <li>• Public</li> <li>• Controlled</li> <li>• Restricted</li> <li>• Confidential</li> <li>• Private</li> </ul> <p>If you assign Public then all users can see and use the object. If you assign Restricted, then only users with the user profile of Restricted or higher can see and use the object.</p>

Feature	Supported	Description
Index Awareness	Yes	<p>Index awareness is the ability to take advantage of the indexes on key columns to speed data retrieval.</p> <p>The objects that you create in Designer are based on database columns that are meaningful to an end user.</p> <p>When you set up index awareness in Designer you tell Designer which database columns are primary and foreign keys.</p> <p>This can have a dramatic effect on query performance in the following ways:</p> <ul style="list-style-type: none"> <li>• Designer can take advantage of the indexes on key columns to speed data retrieval.</li> <li>• Designer can generate SQL that filters in the most efficient way. This is particularly important in a star schema database. If you build a query that involves filtering on a value in a dimension table, Designer can apply the filter directly on the fact table by using the dimension table foreign key. This eliminates unnecessary and costly joins to dimension tables.</li> </ul> <p>Designer does not ignore duplicates with index awareness. If two customers have the same name, Designer will retrieve one only unless it is aware that each customer has a separate primary key.</p>
Projection Function	Partial	<p>When creating a universe measure, you must specify the way the aggregate function will be projected onto a story.</p> <p>This projection function of measures allows local aggregation in the SAP BOE Live Data Connect calculation engine.</p> <p>Available projection functions:</p> <ul style="list-style-type: none"> <li>• SUM</li> <li>• MIN</li> <li>• MAX</li> <li>• COUNT</li> <li>• COUNT WITHOUT EMPTY</li> <li>• AVERAGE</li> <li>• NONE</li> </ul> <p>The DELEGATED function is not supported.</p>

Feature	Supported	Description
Source Information	No	<p>For universes generated from Data Integrator, Technical descriptions and formulas used to calculate target tables from source tables are displayed in this tab.</p> <p>You can specify the following types of information in the Source Information tab:</p> <ul style="list-style-type: none"> <li>• Technical description: Technical descriptions that are available in universes generated from Data Integrator.</li> <li>• Mapping information: The mapping applied within Data Integrator between the source tables and the target tables.</li> <li>• Data Lineage information: List of source columns involved in a target column. This information facilitates the impact analysis through Data Integrator and Web Intelligence reports.</li> </ul>
Linked Universes	Yes	<p>Linked universes are universes that share common components such as parameters, classes, objects, or joins.</p> <p>When you link two universes, one universe has the role of a core universe, the other a derived universe. When changes are made in the core universe, they are automatically propagated to the derived universes.</p>
Advanced Join Properties- Filters in From	Yes	Determines if query conditions are included in the FROM Clause. This setting is only applicable if the other universe parameter setting ANSI92 is set to Yes.
Stored Procedures Universe	Yes	Universe built on stored procedures in a database.
Javabeen Universe	Yes	Universe built on Javabeans with a method returning a 'resultSet'.
User defined objects	Yes	(not documented but available in Designer) Ability to import in a Universe user objects defined in Desktop Intelligence (menu Insert/User Objects...).
External Strategy	Yes	<p>A strategy is a script that automatically extracts structural information from a</p> <p>database or flat file. Strategies have two principle roles:</p> <ul style="list-style-type: none"> <li>• Automatic join and cardinality detection (Join strategies)</li> <li>• Automatic class, object, and join creation (Objects and Joins strategies)</li> </ul> <p>Strategies can be useful if you want to automate the detection and creation</p>
Multilingual Metadata Universe	Yes	With XI3.0 it is possible to localize the Universe metadata with the Translation Manager tool. The language and formatting shown to the user will be chosen to match the user locale, if available.

Feature	Supported	Description
Input column (as of XI3.1)	No	Web Services can be exposed by Data Federator as relational tables. As web services often need input parameters to define the result, Data Federator does expose columns which can be used as input parameters. The data is passed to the column in a where clause (e.g. where country='France' means that we pass the 'France' parameter to the Web Service). The where clause is applied only if the column value is not already defined by the SQL.
Metadata exchange	Yes	Bridges

## 6 Setting up Web Intelligence documents for SAP Analytics Cloud

Like universes, Web Intelligence documents are presented as a flat list in the query panel.

Although there are less universes than documents, a large number of these documents are built on them. Most of these documents are created by end-users for specific questions relating to their activities, and would make little sense to consume in SAP Analytics Cloud. Showing all Web Intelligence documents in the query panel would have very little benefit, and decrease performance by trying to display a long list to documents.

As a consequence, to enable documents for consumption through Live Data Connect, administrators must:

- Make sure that documents are stored in a public folder in the CMS.
- Assign them to a category.
- Specify that category to Live Data Connect using the `boe.webi.category.cuid` parameter (see [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#)).

When consuming data from Web Intelligence documents, Live Data Connect relies on the same consumption approach of documents as within Web Intelligence, and reuses the dataset from the last document refresh. As a consequence:

- Prompts defined in the universe are not surfaced in Live Data Connect: they have already been answered in Web Intelligence during the last document refresh, so these values are implicitly reused.
- To get data close to the underlying datasource, users should schedule document refresh for their Web Intelligence documents. Live Data Connect would then always reuse data from the last refresh, and remain close to the underlying data source.

# 7 Security

SAP BusinessObjects Live Data Connect has security guidelines and best practices.

## Tenants

As a best practice, we recommend having one SAP BusinessObjects Live Data Connect instance per SAP Analytics Cloud tenant. If you're looking to run multiple instances of SAP BusinessObjects Live Data Connect, make sure that they each have a dedicated SAP Analytics Cloud tenant.

## Authentication

Enterprise and SAP authentications to the SAP BI platform use basic authentication. For security reasons, we recommend using them for testing purposes only, and strongly advise to use SAML authentication in production. Make sure to set the authentication mode in the SAP Live Data Connect configuration file. See [Setting up SAML authentication \[page 20\]](#) for more information.

## BI Platform user security

Security rights must be granted to the account you use in the connection definition. Check [Setting up BI universes for SAP Analytics Cloud \[page 30\]](#) for more info.

## Preventing DDoS

To prevent potential Distributed Denial of Service attacks and limit the memory usage, we recommend limiting the size of the datasets handled by SAP BusinessObjects Live Data Connect. To do so, use the `max_rows` and `time_limit` parameters, either at the connection or universe level.

## Log policy

SAP BusinessObjects Live Data Connect uses TraceLog to log files.

Log files might contain sensitive information such as usernames and IP addresses and should be secured properly. Make sure to read Activating Logs section to see how to enable traces.



### ⚠ Caution

Logs files get larger with time and can take a considerable amount of space on the disk over time. As a best practice, we recommend switching them off from time to time and cleaning the log files regularly when they're enabled.

## Session Management

For best practices regarding session management, please refer to [Sessions and session tracking](#) in the *Business Intelligence Platform Administrator Guide*.

## Securing communications between the web browser and SAP BusinessObjects Live Data Connect

For more information, please refer to [Web browser to web server](#) in the *Business Intelligence Platform Administrator Guide*.

## 8 Troubleshooting

This section lists recommendations to help you troubleshoot SAP BusinessObjects Live Data Connect.

If you get errors while using SAP BusinessObjects Live Data Connect, check these points in the `ldc.properties` file:

- Make sure the parameters are properly typed in the properties file (see [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#)).
- Make sure the parameters values are correct, and check that the server and the URL are answering properly (see [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#)).
- Make sure you've set a value for the `boe.authenticationMode` parameter. Possible values are `saml`, `secEnterprise`, `secLDAP` or `secSAPR3`. If you're not using a reverse proxy, make sure you've configured Cross-Origin Resource Sharing (CORS) in the `ldc.properties` file.
- Make sure the application server and the SAP BI Platform are running.
- Either in the information design tool or the universe design tool, depending on your universe type, make sure to run a check integrity and fix any warnings or errors.
- Check the security rights (see [Setting up BI users for SAP Analytics Cloud \[page 27\]](#)). If you change a user's security rights on SAP BI Platform, log out from SAP Analytics Cloud to end this user's session and apply the changes.
- Try creating the same query and retrieve the same data set in Web Intelligence, logged in with the same user, using the same universe.
- If you have created a model on a universe that contains prompts and list of values with SAP Live Data Connect 2.x, edit your model and save it to force the upgrade to SAP Live Data Connect 3.x.
- If you have issues with a model after a Live Data Connect upgrade, this might indicate a conflict between a new Live Data Connect feature and its previous implementation in the model. In this case, open the model as if you were going to edit it, and save it. There is no need to make any change, this will allow Live Data Connect to update the model to match the current implementation.

When troubleshooting Live Data Connect, stop the service, and run Live Data Connect from the command line. The command line prints out debugging information, so this enables faster diagnosis of issues.

## SAP BusinessObjects Live Data Connect error messages

Work-flow	Error Message	Cause	Resolution
Create a connection	Unable to authenticate. Please ensure your credentials are valid.	<ul style="list-style-type: none"> <li>The credentials aren't correct.</li> <li>The authentication mode set in the properties file isn't correct.</li> <li>If you use SAML authentication, no matching user is found in the SAP BI platform system because of an incorrect mapping of Name ID attribute of the Identity Provider and the user's Account Name in the SAP BIP System.</li> </ul>	<ul style="list-style-type: none"> <li>Check that the credentials are correct.</li> <li>In the properties file, set the <code>boe.authenticationMode</code> parameter with one of the values: <code>saml</code>, <code>secEnterprise</code>, <code>secLDAP</code> or <code>secSAPR3</code>, and restart the application server.</li> <li>Check that the names you've mapped are identical.</li> </ul>

Work-flow	Error Message	Cause	Resolution
Create a connection	Failed to connect to system.	<ul style="list-style-type: none"> <li>The host-name or the port set in the connection definition is incorrect.</li> <li>The application server is not started.</li> <li>The LDE port defined in the properties file is not correct.</li> </ul>	<ul style="list-style-type: none"> <li>Set the correct host and port running SAP BusinessObjects Live Data Connect when creating the connection.</li> <li>Start the application server running SAP BusinessObjects Live Data Connect.</li> <li>In the properties file, set the <code>engine.port</code> parameter with the correct port number, and restart the application server.</li> </ul>
Create a connection	Failed to connect to system.  Server Error: Error [Server]: (#121) Error occurred in BOE: 'REST Web Services unreachable, invalid content type (text/html) please check your LUC configuration'	In the properties file, the URL passed in <code>boe.restUrl</code> parameter isn't valid.	Check that you've set the <code>boe.restsdkurl</code> parameter, and restart the application server.
Create a connection	Failed to connect to system.  Server Error: Error [Server]: [[INVALID_AUTH_MODE] 0]	<ul style="list-style-type: none"> <li>The authentication mode defined in the properties files is unknown.</li> <li>The authentication mode defined in the properties files has not been set.</li> <li>No properties file has been defined.</li> </ul>	In the properties file, set the <code>boe.authenticationMode</code> parameter with one of the values: <code>saml</code> , <code>secEnterprise</code> , <code>secLDAP</code> or <code>secSAPR3</code> , and restart the application server.

Work-flow	Error Message	Cause	Resolution
Create a connection	Failed to connect to system. <cnx name> already exists.	A connection with the same already exists in the repository.	Make sure the connection has a unique name.
Create a model	An unexpected error occurred, please contact your administrator.	The SAML keystore has expired.	Generate a new keystore, and upload the SAML metadata to the existing Identity Provider Application. Refer to <a href="#">this page [page 20]</a> for detailed instructions.
Create a model	System or data source is not available.	You haven't selected a universe as a data source when creating a model.	Select a universe to define the model's data source.
Create a model	Protocol Error: Error [Protocol]: (#73) Error [Protocol]: (#401)	The connection has no credentials. The connection details might have changed.	Set a valid username and password to connect to the SAP BI Platform repository.
Create a model	Error [Protocol]: (#73)	The credentials defined in the connection are invalid. They might have changed since the connection has been created.	Set a valid username and password to connect to the SAP BI Platform repository.
Create a model	No universe is displayed in the dialog box.	You don't have the <a href="#">View Objects</a> security right on the Universes folder.	In the Central Management Console, assign the <a href="#">View Objects</a> security right on the <a href="#">Universes</a> top-folder. Refer to <a href="#">this page [page 28]</a> for detailed instructions.

Work-flow	Error Message	Cause	Resolution
Create a model	No object is displayed in the dialog box.	<ul style="list-style-type: none"> <li>You don't have the <a href="#">Create and Edit query</a> security right on this universe (.UNV).</li> <li>If it's a .UNX universe, all business views are denied to the user through Create Query Business Security Profile.</li> </ul>	<ul style="list-style-type: none"> <li>In the Central Management Console, assign the <a href="#">Create and Edit Queries Based on Universe</a> security right. Log out SAP Analytics Cloud, and log in again.</li> <li>In information design tool, edit the Business Security Profile to grant a business view to the user. Refer to <a href="#">this page</a> for more info.</li> </ul>
Create a model	Nothing happens when you click on OK after you've created your query.	You don't have the security right on Web Intelligence.	In the Central Management Console, set the security right on Web Intelligence. Log out SAP Analytics Cloud, and log in again. Refer to for detailed instructions.
Open a model	<p>Server Error: Error [Server]: Univers not found:&lt;universe CUID&gt;; MsgClass: ;</p> <p>[Application Error]: Server Error: Error [Server]: Univers not found:&lt;universe CUID&gt;; MsgClass: ;: Univers not found:&lt;universe CUID&gt;; MsgClass: ;</p>	<p>You no longer have access to the universe:</p> <ul style="list-style-type: none"> <li>It has been deleted from the CMS repository .</li> <li>You no longer have the security right to access it.</li> </ul>	<ul style="list-style-type: none"> <li>Restore or republish the universe in the SAP BI Platform repository.</li> <li>In the Central Management Console, check that you have the <a href="#">View Objects</a> security right on that universe. Refer to <a href="#">this page [page 28]</a> for detailed instructions.</li> </ul>

Work-flow	Error Message	Cause	Resolution
Open a model	<p>Server Error: Error [Server]: Some objects are not available to your user profile. You cannot refresh this query. See your BusinessObjects administrator to request rights.; MsgClass: ;</p> <p>[Application Error]: Server Error: Error [Server]: Some objects are not available to your user profile. You cannot refresh this query. See your BusinessObjects administrator to request rights.; MsgClass: ;</p>	An object that's part of the query has been removed from the universe.	Restore a previous version of the universe. If you must recreate the object, make sure to edit the query and the stories based on the model to add the object.
Open a model	<p>Server Error: Error [Server]: dp-&gt;GenerateStatements(context); MsgClass: ;</p> <p>[Application Error]: Server Error: Error [Server]: dp-&gt;GenerateStatements(context); MsgClass: ;</p>	If the universe has been created in Information Design Tool (.UNX), a Data Access Business Security Profile doesn't allow you to access an object in the universe.	Ask your administrator to edit your Business Security Profile in information design tool and grant you the security right. Refer to <a href="#">this page</a> for detailed instructions.
Create a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [Some objects are not available to your user profile. You cannot refresh this query. See your BusinessObjects administrator to request rights.]</p>	An object that's part of the query has been removed from the universe.	Restore a previous version of the universe. If you must recreate the object, make sure to edit the query and the stories based on the model to add the object.

Work-flow	Error Message	Cause	Resolution
Create a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [The following database error occurred: (CS) "Unable to bind to Configuration object". For information about this error, please refer to SAP Knowledge Base Article 2054721 on the SAP Support Portal. (IES 10901)]</p>	<p>You don't have the <a href="#">View</a> security right on the Connection Server.</p>	<p>In the Central Management Console, check that you have the <a href="#">View</a> security right on the connection. Refer to <a href="#">this page [page 27]</a> for detailed instructions.</p>
Open a story	<p>The following database error occurred: [Microsoft] [ODBC Driver Manager] The specified DSN contains an architecture mismatch between the Driver and Application.</p>	<p>You query a universe that connects to its data source through an ODBC driver with a 32-bit DSN,</p> <p>Live Data Connect is deployed on a server where the 32-bit DSN has not been defined.</p>	<p>On the server where Live Data Connect has been installed, define the 32-bit DSN for the ODBC driver with the same name than the 64-bit ODBC DSN.</p>
Open a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [Universe not found: &lt;universe CUID&gt;]</p>	<p>You can no longer access the universe:</p> <ul style="list-style-type: none"> <li>• It has been deleted from the CMS repository.</li> <li>• You don't have the security right to access it.</li> </ul>	<ul style="list-style-type: none"> <li>• Restore or republish the universe in the SAP BI Platform repository.</li> <li>• In the Central Management Console, check that you have the <a href="#">View Objects</a> security right on that universe. Refer to <a href="#">this page [page 28]</a> for detailed instructions.</li> </ul>



Work-flow	Error Message	Cause	Resolution
Open a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [The following database error occurred: (CS) "Unable to bind to Configuration object". For information about this error, please refer to SAP Knowledge Base Article 2054721 on the SAP Support Portal. (IES 10901)]</p>	<p>You don't have the security right on the Connection Server.</p>	<p>In the Central Management Console, check that you have the <a href="#">View</a> security right on the connection. Refer to <a href="#">this page [page 27]</a> for detailed instructions.</p>
Open a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [Some objects are not available to your user profile. You cannot refresh this query. See your BusinessObjects administrator to request rights.]</p>	<p>An object that's part of the query has been removed from the universe.</p>	<p>Restore a previous version of the universe. If you must recreate the object, make sure to edit the query and the stories based on the model to add the object.</p>
Open a story	<p>Unable to retrieve data from the datasource.</p> <p>Error: [dp-&gt;GetDPStdRefresher().Refresh()]</p>	<ul style="list-style-type: none"> <li>You don't have the <a href="#">Data Access</a> security right on the universe.</li> <li>You don't have the <a href="#">Data Access</a> security right on the connection used by the universe.</li> </ul>	<ul style="list-style-type: none"> <li>In the Central Management Console, check that you have the <a href="#">Data Access</a> security right on this universe. Refer to <a href="#">this page [page 28]</a> for detailed instructions.</li> <li>In the Central Management Console, check that you have the <a href="#">Data Access</a> security right on the connection used by the universe. Refer to <a href="#">this page [page 28]</a> for detailed instructions.</li> </ul>

Work-flow	Error Message	Cause	Resolution
Open a story	Unable to retrieve data from the datasource.  Error: [dp->GenerateStatements(context)]	If the universe has been created in Information Design Tool (.UNX), a Data Access Business Security Profile doesn't allow the user to access an object in the universe.	Ask your administrator to edit your Business Security Profile in information design tool and grant you the security right. Refer to <a href="#">this page</a> for detailed instructions.
Open a story	Server Warning  Cube contains partial result, see universe parameters.	You've reached the limit of the universe (time out or max rows property).	Increase the universe time out or max rows values.

If you're using SAML authentication, try these:

- Check that the SAP Analytics Cloud login matches the SAP BIP login. If needed, edit the `SAML_USER_MAPPING` property in SAP Analytics Cloud.
- Check the certificate date validity for SAP BusinessObjects Live Data Connect.
- Check the signature algorithm used by your identity provider. Refer to the `saml.signaturealgorithm` parameter for more information.
- Occasional SAML login failures can be caused by a value for SAML maximum authentication age too low on the Live Data Connect side. In this case, SAML tokens expire too early for Live Data Connect, causing login to fail. To fix this, go to `conf` folder, and edit the `securityContext_template.xml` file. Set the `maxAuthenticationAge` parameter to a higher value (ideally the same value as the one used by your identity provider), and restart Live Data Connect.

If you need to contact SAP support, please prepare the following documents:



- The SAP BusinessObjects Live Data Connect properties file (see [Configuring SAP BusinessObjects Live Data Connect \[page 15\]](#)).
- SAP BusinessObjects Live Data Connect trace files: `tracelog*.glf`, `restsrv*.glf`, `errorinfo`, `errorinfo.dmp` and `errorinfo.callstack` (see [Activating logs \[page 25\]](#)).
- Traces of the Tomcat application server running SAP BusinessObjects Live Data Connect.
- The application server traces if you're running WACS in a separate Tomcat application server.
- HAR file that logs HTTP calls. It can be generated with Chrome or Fiddler (see SAP Note [1766704](#)).
- The full landscape of your environment (SAP BIP version, SAP BusinessObjects Live Data Connect version, SAC tenant, universe in BIAR file...) and step-by-step workflow.

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