

## **Administrator's Guide**

**CUSTOMER**

SAP Business One analytics 1.2 powered by SAP HANA

SAP Business One 9.1 PL10 and Higher, 9.2

SAP HANA 1.0 SPS 10 Rev. 102.03

Document Version: 1.0 – 2015-11-27

# **SAP Business One analytics powered by SAP HANA Administrator's Guide**

**All Countries**



# Typographic Conventions

Type Style	Description
<i>Example</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Textual cross-references to other documents.
<b>Example</b>	Emphasized words or expressions.
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
<b>Example</b>	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE	Keys on the keyboard, for example, F2 or ENTER.

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# Document History

Version	Date	Changes
1.0	2015-11-27	First version.

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>6</b>
<b>2</b>	<b>Related Documentation.....</b>	<b>7</b>
<b>3</b>	<b>Application Overview .....</b>	<b>8</b>
<b>4</b>	<b>Prerequisites.....</b>	<b>10</b>
4.1	Host Machine Prerequisites .....	10
4.2	Other Prerequisites .....	10
4.3	License Requirements .....	12
<b>5</b>	<b>Installing SAP Business One analytics powered by SAP HANA.....</b>	<b>13</b>
5.1	Wizard Installation .....	13
5.2	Console Installation .....	15
5.3	Uninstalling the Application .....	16
<b>6</b>	<b>Upgrading SAP Business One analytics powered by SAP HANA.....</b>	<b>17</b>
6.1	Wizard Upgrade .....	17
6.2	Console Upgrade .....	18
<b>7</b>	<b>Initializing and Maintaining Databases .....</b>	<b>19</b>
7.1	Starting the Administration Console .....	19
7.2	Adding Microsoft SQL Servers .....	21
7.3	Initializing Company Databases .....	22
7.3.1	Starting the Initialization .....	22
7.3.2	Reinitializing Databases .....	23
7.4	Scheduling Data Replication.....	24
7.4.1	Defining Replication Scope .....	25
7.5	Monitoring Data Replication .....	26
7.5.1	Receiving Notifications from the Remote Support Platform .....	27
7.5.2	Comparing Data Between the Microsoft SQL Server and SAP HANA Databases .....	29
7.5.3	Typical Errors .....	30
7.5.4	Configuring Data Replication Service Parameters .....	31
7.6	Backing Up and Restoring Company Databases.....	37
7.6.1	Backing Up Databases.....	37
7.6.2	Restoring Databases .....	37
7.6.3	Deleting Backups .....	38
<b>8</b>	<b>Enabling Analytical Features in SAP Business One.....</b>	<b>39</b>
<b>9</b>	<b>Managing Security .....</b>	<b>41</b>
9.1	Deployment.....	41
9.2	Transport Level Security.....	41
9.3	User Security on the SAP HANA Database Server .....	42

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<b>10</b>	<b>Troubleshooting .....</b>	<b>43</b>
<b>Appendix</b>	<b>Integrated Third-Party Products .....</b>	<b>47</b>

# 1 Introduction

The *SAP Business One analytics powered by SAP HANA Administrator's Guide* provides a central point for the technical implementation of the SAP Business One analytics powered by SAP HANA application. Use this guide for reference and instructions before and during the implementation project.

This guide consists of the following main sections:

- [Prerequisites](#)

This section outlines the prerequisite steps you must complete before you can proceed with the installation and configuration of SAP Business One analytics powered by SAP HANA.

- [Installing SAP Business One analytics powered by SAP HANA](#)

This section provides instructions for installing and removing the application.

- [Upgrading SAP Business One analytics powered by SAP HANA](#)

This section provides instructions for upgrading the application.

- [Initializing and Maintaining Databases](#)

This section assists you with the following database administrative operations for the SAP HANA database:

- Verifying server connections
- Initializing company databases
- Scheduling data replication
- Monitoring data replication
- Performing backup and restore functions

- [Enabling Analytical Features in SAP Business One](#)

This section describes how to enable the SAP HANA-based analytical features within the SAP Business One client.

- [Managing Security](#)

This section provides recommendations for meeting the security demands of the application.

- [Troubleshooting](#)

This section includes troubleshooting information.

## More Information

For the latest information that may not appear in this guide, see the following SAP Notes:

- SAP Note [2230158](#) (Central Note for SAP Business One analytics 1.2 powered by SAP HANA)
- SAP Note [2230332](#) (Release Update Note for upgrade issues and software limitations)
- SAP Note [2230322](#) (Collective Note for documentation issues)
- SAP Note [2230216](#) (Collective Note for other general issues)

## 2 Related Documentation

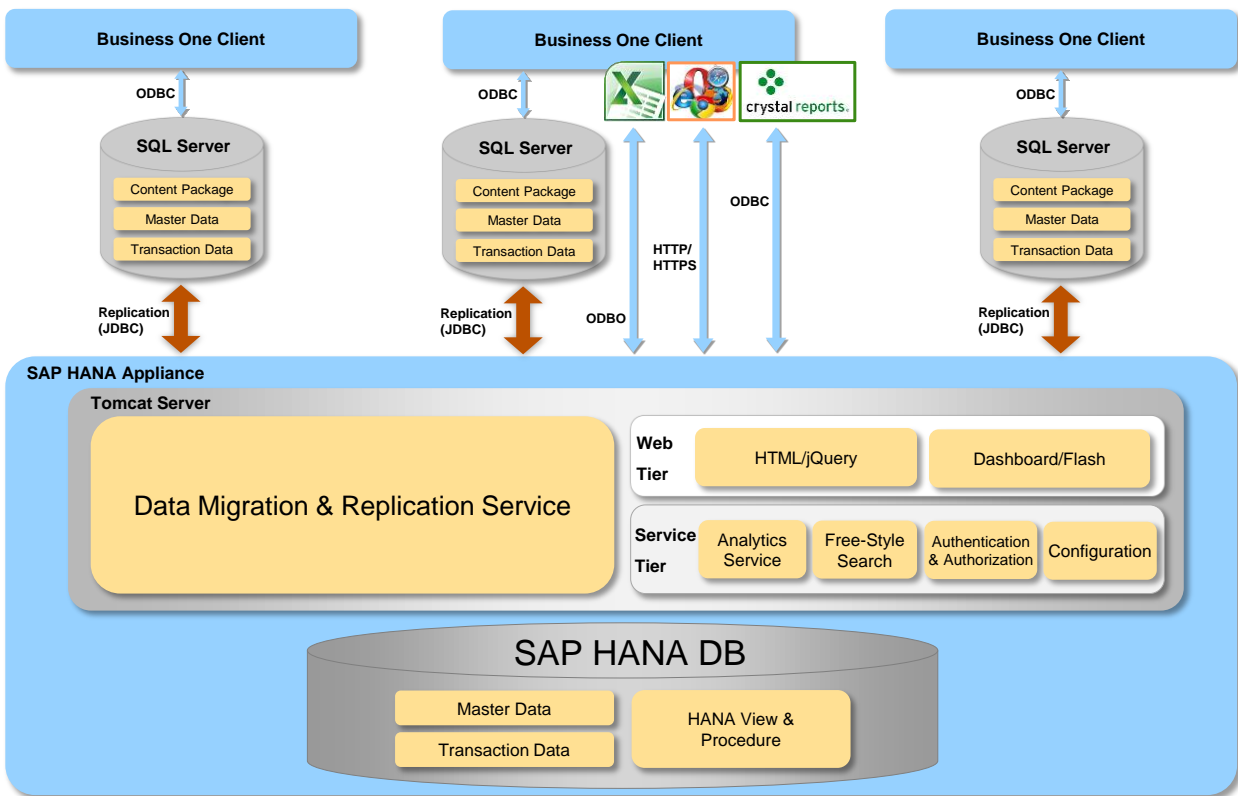
Features and Functions	Documentation
Enterprise search	<p><i>Working with SAP Business One analytics powered by SAP HANA</i></p> <p>You can find the guide in the SAP Business One analytics powered by SAP HANA product package: <a href="#">\Documentation\EndUser</a>.</p>
Real-time dashboards	
Pre-defined Crystal reports	
Pre-defined Interactive Analysis reports	
Interactive Analysis 2.0	<p>For installation instructions, see the <i>SAP Business One Administrator's Guide</i>, available in the SAP Business One product package: <a href="#">\Documentation\SystemSetup</a>.</p>
	<p>For instructions on designing Interactive Analysis reports, see the online help. After enabling the Interactive Analysis add-on in Microsoft Excel, you can find the help on the new <i>Interactive Analysis</i> tab of Microsoft Excel.</p>
Designing Crystal reports using the SAP HANA data source	<p><i>How to Set Up SAP Business One, version for SAP HANA Data Sources for Crystal Reports</i></p> <p>You can find the guide on <a href="http://sappartneredge.com">sappartneredge.com</a>.</p>

### 3 Application Overview

As more customers require Business Intelligence (BI), SAP introduced High Performance Analytical Appliance (HANA) technology to SAP Business One. SAP HANA technology relies on main memory for computer data storage, providing faster and more predictable performance than database management systems that employ a disk storage mechanism.

SAP Business One analytics powered by SAP HANA is an application used together with SAP Business One. It works with an SAP HANA database server that holds company databases, and provides various analytical features powered by SAP HANA, including enterprise search, real-time dashboards, Microsoft Excel interactive analysis, and pre-defined Crystal reports. To avoid disrupting customers' daily business activities in SAP Business One, company databases are migrated and continuously replicated from the SAP Business One server (the Microsoft SQL Server database server) to the SAP HANA database server.

The following figure shows the typical architecture of an SAP Business One analytics powered by SAP HANA landscape.



After you install the application, initialize the company databases on the SAP HANA database server, and enable the analytical features in the SAP Business One client, you can access the SAP HANA-based analytical features within SAP Business One.



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 **Caution**

You can only use SAP Business One analytics powered by SAP HANA with data from an SAP Business One database. Other data sources are not supported.

# 4 Prerequisites

Before installing and upgrading SAP Business One analytics powered by SAP HANA, ensure you have fulfilled the following prerequisites.

## 4.1 Host Machine Prerequisites

- You have installed one of the following operating systems:
  - SUSE Linux Enterprise Server 11 SP3 (x86\_64)
  - SUSE Linux Enterprise Server 11 SP4 (x86\_64)
- You have installed OpenSSL 0.9.8h-30.17.11 or later.
- You have installed SAP HANA 1.0 SPS 10 Revision 102.03 with the database user `SYSTEM`.

### Note

When installing a newly certified HANA appliance with a recommended HANA revision, the installation might not succeed due to failed hardware checks. You can refer to SAP Note [1658845](#) for the solution.

### Note

For more information about installing SAP HANA, refer to the guides in the *Installation and Upgrade Information* section of SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).

- Ports 8080, 8443, 8009, and 8005 are not in use.

### Recommendation

Do not run Tomcat Web applications on the SAP HANA server.

### Recommendation

The analytical features require your business data to be replicated from the Microsoft SQL database to the SAP HANA database. To ensure successful data replication, we recommend that you include your SAP HANA server and Microsoft SQL database server on the same intranet.

## 4.2 Other Prerequisites

### Database Server

- You are using Microsoft SQL Server 2008, 2008 R2, 2012 or 2014 as your database server.
- You have ensured that the SAP Business One server (Microsoft SQL Server) and the SAP HANA database server (Linux) can ping each other using both IP addresses and host names. If the license server is not the

same as the SAP Business One server, you must also ensure that the license server (Windows) and the SAP HANA database server (Linux) can ping each other using both IP addresses and host names. If the license server and the database server cannot ping each other using host names, make sure your DNS or DHCP server configuration is correct (that is, the host name and its mapping to the IP address are correctly configured in the DNS or DHCP service). After configuration, use host names or static IP addresses in the server component configuration.

### Caution

Do not use dynamic IP addresses in the server component configuration.

### Note

Mapping IP addresses to host names in the *Windows* → *System32* → *drivers* → *etc* → *hosts* file is a temporary solution.

- You have registered your Microsoft SQL Server instance with the System Landscape Directory (either during the SAP Business One installation or manually in the System Landscape Directory) in one of the following formats:

- **<Hostname/IP Address>**

In this case, the default port (1433) must be used by the instance.

- **<Hostname/IP Address>\<Instance Name>**

- **<Hostname/IP Address>\<Instance Name>:<Port>** or **<Hostname/IP Address>\<Instance Name>,<Port>**

The port number takes precedence over the instance name. In other words, the instance is registered using the port rather than its name.

### Note

If you have registered your Microsoft SQL Server instance in the format of **<Hostname/IP Address>\<Port>**, you must first re-register the instance in one of the supported formats in the System Landscape Directory.

## Client Workstation

- You have installed one of the following on each of your client workstations:
  - SAP Business One 9.1 PL10 or later
  - SAP Business One 9.2
- You have installed the SAP HANA database client (for Windows) on each of your client workstations. For more information, see *SAP HANA Client Installation Guide* at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).

### Note

There must be an SAP HANA database client with the corresponding system type for the SAP Business One client and Microsoft Excel, respectively. Therefore, if you have installed a 64-bit SAP Business One client and 32-bit Microsoft Excel, you must install both 32-bit and 64-bit SAP HANA database clients.

- To install and use Interactive Analysis, ensure that you have installed the following on each client workstation:
  - Microsoft Excel 2010 or 2013
  - Microsoft .Net Framework 4.5.2

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If you do not have Microsoft .NET Framework 4.5.2 installed, it is installed during the Interactive Analysis installation process.

**i** Note

If you install Microsoft .NET Framework during the Interactive Analysis installation process, you will have to restart your machine. To avoid a restart, you may choose to install the framework before starting the SAP Business One installation.

- Microsoft Visual Studio 2010 Tools for Office Runtime

If you do not have Microsoft Visual Studio 2010 Tools for Office Runtime installed, it is also installed during the Interactive Analysis installation process.

- You have installed Microsoft Windows Internet Explorer 8 or the latest Chrome for accessing the Administration Console.
- To design an SAP Crystal report using the SAP Business One analytics powered by SAP HANA data source, ensure that you have installed SAP Crystal Reports, version for the SAP Business One application on the client computer.

## 4.3 License Requirements

To use SAP Business One analytics powered by SAP HANA, you require one of the following SAP Business One license types:

- PROFESSIONAL
- CRM-LTD
- FINANCIALS-LTD
- LOGISTICS-LTD
- B1STARTER

For more information about licenses, see the [SAP Business One License Guide](#).

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# 5 Installing SAP Business One analytics powered by SAP HANA

You must install SAP Business One analytics powered by SAP HANA on the same machine on which you installed SAP HANA. To install or remove the application, you must be the Linux root user. The two options for installing SAP Business One analytics powered by SAP HANA are as follows:

- Wizard installation – You can use a wizard provided by SAP to install the application.
- Console installation – You can install the application from the Linux console. If you select this option, the system does not display messages or windows during the installation process.

## Prerequisite

You have obtained the SAP Business One analytics powered by SAP HANA installation package.

### Note

You can download the SAP Business One analytics powered by SAP HANA installation package from the SAP Business One software download center at <https://support.sap.com/software/business-one.html>.

## 5.1 Wizard Installation

### Procedure

1. From the installation package provided by SAP, in a command prompt, run `./InstData/VM/install.bin`.

### Note

The installation requires a graphical environment.

2. In the InstallAnywhere wizard welcome window, choose the *Next* button.
3. In the *Installation Type* window, select the installation option, and choose the *Start* button.
4. In the InstallAnywhere wizard welcome window, choose the *Next* button.
5. In the *Customer Information* window, specify your user ID and company name.
6. In the *Setup Type* window, do either of the following:
  - To automatically install all required components, select the *Typical* radio button and proceed to step 9.
  - To specify an installation directory and view software components, select the *Custom* radio button.
7. In the *Specify Installation Folder* window, to accept the default location (`/opt/sap/SAPBusinessOne`), choose the *Next* button.

To select a different location, choose the *Choose...* button and select a destination.

8. In the *View Features* window, select the features to be installed to view their descriptions.
9. In the *License Authentication* window, specify the license server information you defined during the installation of the SAP Business One server tools.

**i** Note

Ensure that you can ping the license server IP address from your Linux server. For more information, see [Other Prerequisites](#).

For more information about installing the SAP Business One server tools, see the *SAP Business One Administrator's Guide (SQL)*.

10. In the *Connection Settings* window, specify the following parameters for connecting to an SAP Business One server:
  - o *Server Type* – Select the type of the SAP Business One server from the dropdown list.
  - o *Server Name* – Select an SAP Business One server from the dropdown list.

**i** Note

Server names longer than 20 characters are truncated in the dropdown list. However, the full server name is used to connect to the SAP Business One server and saved in the SAP HANA database.

- o *Database User ID* – Specify the user ID to access the SAP Business One database (Microsoft SQL Server).
  - o *Database Password* – Specify the password to access the SAP Business One database.
11. In the *Select Source Databases* window, select at least one company database that you want to use in the application.

**i** Note

You can select only databases with the status *Ready*. Databases with the status *Not Ready* may be invalid, archived, or in the process of being upgraded.

12. In the *Specify Parameters* window, specify the following:
  - o *SAP HANA Database Password* – Enter the password for the SAP HANA database user `system`.  
Enter the same database user password as the one you use in SAP HANA 1.0.
  - o *Administration Console Admin Password* – Specify a password for the Administration Console admin user account which is used to perform initialization, replication, backup, and restoration of databases in the Administration Console.  
Specify a password between 3 and 12 characters, without white space characters (for example, carriage returns, tabs, and spaces), or double-byte characters.
13. In the *Review Settings* window, do either of the following:
  - o To install the selected components, choose *Install*.
  - o To change the settings, choose *Previous* to return to the previous steps.
14. In the *Installation Complete* window, choose *Done*.

---

## 5.2 Console Installation

### Procedure

1. From the installation package provided by SAP, run `/InstData/VM/install.bin -i console`.
2. Enter `i` to install SAP Business One analytics powered by SAP HANA.
3. Specify the directory in which you want to install the application.
4. Enter and confirm the Administration Console admin user password. This password is used to perform initialization and maintenance of databases in the Administration Console.  
Specify a password between 3 and 12 characters, without white space characters (for example, carriage returns, tabs, and spaces) or double-byte characters.
5. Specify the SAP HANA database instance number.
6. Enter the password for the SAP HANA database server user `SYSTEM`.
7. Review the installation settings.

To install the application, press `ENTER`.

After the installation is complete, a message appears displaying the folder in which the application was successfully installed.

#### Note

You can cancel the installation process at any point by entering the following command:

```
quit
```

#### Note

After the installation process is complete, you must specify the license server information in the Administration Console.

For more information about license servers, see the [SAP Business One Administrator's Guide \(SQL\)](#).

## 5.3 Uninstalling the Application

You can uninstall SAP Business One analytics powered by SAP HANA using a wizard or the Linux console.

### Recommendation

If you install the application using the installation wizard provided by SAP, uninstall the application using the wizard. If you perform a console installation, uninstall the application using the console method.

### Prerequisite

Before initiating the uninstallation, ensure that the `JAVA_HOME` environment variable has been assigned and that your `$PATH` setting includes the directory `$JAVA_HOME/bin`. To check these prerequisites, do the following:

1. Run the command `echo JAVA_HOME`. If the result is null or that an invalid JVM is specified, run the following command:

```
export JAVA_HOME=<JVM directory>
```

2. Run the command `echo PATH`. If the directory `$JAVA_HOME/bin` is missing from the result list, run the following command:

```
export PATH=$JAVA_HOME/bin:$PATH
```

### Procedure

1. Navigate to the installation folder of SAP Business One analytics powered by SAP HANA:  
`<application_installation_folder>/_B1A_Installation`.

#### Example

The default installation folder is `/opt/sap/SAPBusinessOne/_B1A_Installation`.

2. Use the relevant command to uninstall the application:
  - o Wizard uninstallation: run `./Change_B1A_Installation` and follow the steps in the wizard.
  - o Console uninstallation: run `./Change_B1A_Installation -i console` until a successful uninstallation message appears.



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## 6 Upgrading SAP Business One analytics powered by SAP HANA

### **i** Note

After upgrading SAP Business One analytics powered by SAP HANA, you must reinitialize the company databases.

### **i** Note

You cannot restore databases from backup files created from lower releases of the software.

You must run the upgrade on the same machine on which you installed SAP Business One analytics powered by SAP HANA. To upgrade the application, you must be the Linux root user. The two options for upgrading SAP Business One analytics powered by SAP HANA are as follows:

- Wizard upgrade – You can use a wizard provided by SAP to upgrade the application.
- Console upgrade – You can upgrade the application from the Linux console. If you select this option, the system does not display messages or windows during the upgrade process.

### Prerequisites

- You have installed an earlier version of SAP Business One analytics powered by SAP HANA than the version to which you want to upgrade.
- You have stopped database migration and replication from the Microsoft SQL Server database to the SAP HANA database.

## 6.1 Wizard Upgrade

### Procedure

1. From the installation package provided by SAP, run `./InstData/VM/install.bin`.

### **i** Note

The installation requires a graphical environment.

In the InstallAnywhere wizard welcome window, choose the *Next* button.

2. In the *Installation Type* window, select the upgrade option, and choose the *Start* button.
3. In the InstallAnywhere wizard welcome window, choose the *Next* button.

The wizard proceeds directly to step 4 or 5.

- 
4. If an initialization or replication process is running, the *Check SAP HANA Status* window appears, giving a warning. You must stop the initialization or replication process before you can proceed with the upgrade. After you have stopped the initialization or replication process, select the checkbox *Initialization or replication stopped*, and choose the *Next* button.
  5. In the *Review Settings* window, do either of the following:
    - To install the selected components, choose the *Install* button.
    - To change the settings, choose *Previous* to return to the previous steps.
  6. In the *Installation Complete* window, choose the *Done* button.

## 6.2 Console Upgrade

### Procedure

1. From the installation package provided by SAP, run `/InstData/VM/install.bin -i console`.
2. Enter `u` to upgrade SAP Business One analytics powered by SAP HANA.
3. Review the upgrade settings.

To upgrade the application, press `ENTER`.

#### Note

You can cancel the installation process at any point by entering the following command:

`quit`

---

# 7 Initializing and Maintaining Databases

To avoid disrupting customers' daily business activities in SAP Business One, the application provides a Web-based Administration Console that you can use to replicate data from the SAP Business One database (Microsoft SQL Server) to the SAP HANA database for advanced data analysis.

## Note

To correctly migrate and replicate company databases from an SAP Business One server to the SAP HANA database server, ensure that the date and time on the two servers are synchronized.

You can use the Administration Console to perform the following functions:

- Change the license server information.
- Add or delete SAP Business One database servers (SQL). For more information, see [Adding Microsoft SQL Servers](#).
- Initialize company databases on the SAP HANA database server. For more information, see [Initializing Company Databases](#).
- Schedule data replication and define the replication scope. For more information, see [Scheduling Data Replication](#) and [Defining Replication Scope](#).

## Note

The system proactively monitors the replication process and works with the remote support platform (RSP) to send email notifications in case of any errors, change in status, or data differences. For more information, see [Monitoring Data Replication](#).

- Compare data between the SQL and SAP HANA servers. For more information, see [Comparing Data Between the Microsoft SQL Server and SAP HANA Databases](#).
- Back up and restore the SAP HANA instance. For more information, see [Backing Up and Restoring Company Databases](#).

## 7.1 Starting the Administration Console

To initialize and maintain company databases on SAP HANA, you must first start the Administration Console.

### Prerequisites

You have the Administration Console admin user name (*admin*) and password that you specified during the installation of SAP Business One analytics powered by SAP HANA. For more information, see [Installing SAP Business One analytics Powered by SAP HANA](#).

## Note

You can change the admin password after logging onto the Administration Console. The password consists of 3 to 12 characters, without white space characters (for example, carriage returns, tabs, spaces), or double-byte characters (for example, Chinese characters).

## Procedure

1. In a Web browser, navigate to the following URL:  
[https://<SAP\\_HANA\\_Server\\_IP\\_Address>:8443/Enablement](https://<SAP_HANA_Server_IP_Address>:8443/Enablement)
2. To log on to the Administration Console, enter the Administration Console admin user name and password, select your preferred language, and choose the *Log On* button.

The Administration Console homepage appears. The following table describes the different sections on the homepage:

Section	Description
<a href="#">SAP HANA Server Statistics</a>	<p>Displays SAP HANA server information.</p> <p>When the memory usage or disk volume usage reaches 90% or more, the status bar turns red and displays <i>reaching limit....</i> We recommend that you release some memory or disk space when you see the warning.</p> <p>If the logon password of the SAP HANA <code>SYSTEM</code> user has been changed in the SAP HANA studio, you must proceed as follows to connect to the SAP HANA database:</p> <ol style="list-style-type: none"><li>1. Update the password by choosing the <i>Change Password</i> button.</li><li>2. Stop and restart SAP Business One analytics powered by SAP HANA. For more information, see the section <i>Stopping and Restarting SAP Business One analytics powered by SAP HANA</i> in <a href="#">Troubleshooting</a>.</li></ol>
<a href="#">SAP HANA Database Backup and Restore</a>	<p>Enables you to back up and restore the SAP instance, including all company databases that are replicated to the SAP HANA server.</p>
<a href="#">License Server Overview</a>	<p>Displays the license server information. You can also change the following license server information:</p> <ul style="list-style-type: none"><li>• Server name or address</li><li>• Server port</li><li>• Site user password</li></ul>
<a href="#">SQL Server Overview</a>	<p>Displays the number of Microsoft SQL Servers that you have added for replicating data to the SAP HANA database server</p>

Section	Description
<a href="#">Company Overview</a>	Displays the following information: <ul style="list-style-type: none"> <li>• Number of company databases on added SQL Servers</li> <li>• Number of initialized company databases</li> <li>• Number of company databases for which you have scheduled data replication</li> <li>• Number of company databases for which the system has detected errors</li> </ul>

## 7.2 Adding Microsoft SQL Servers

SAP Business One analytics 1.1 powered by SAP HANA supports multiple company databases hosted on multiple database servers (SQL). Note that the database servers must all be registered on the license server specified in the homepage.

### Procedure


To add a new SQL Server in the Administration Console to replicate its data to the SAP HANA database server, proceed as follows:

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. On the [SQL Servers](#) tab page, choose the [Add](#) button.
3. In the [Add SQL Server](#) window, specify the following information:
  - Server type
  - Server address
4. Choose the [Save](#) button.

### Result

You can use the analytical features for the company databases hosted on the newly added SQL Server provided the databases are initialized. For more information, see [Initializing Company Databases](#).

#### Note

If the system displays a red icon  for the status of an SQL Server, the server is not connected.

## 7.3 Initializing Company Databases

Before you can use SAP Business One analytics powered by SAP HANA, you must migrate company databases from the SAP Business One server to the SAP HANA database server.

### Recommendation

Define the replication scope before you initialize your company database. The initialization process migrates only database tables within the replication scope. For more information, see [Defining Replication Scope](#).

### 7.3.1 Starting the Initialization

#### Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. On the *Companies* tab page, click a company name under the appropriate SQL Server.  
Note that companies on different servers may share the same name. For more information, see SAP Note [1838063](#).
3. In the *Database Initialization* section, from the *Model Language* dropdown list, select a language. The labels of pre-defined models provided by SAP will be displayed in the selected language after initialization.

#### Note

If you want to change the display language after initialization, you must redeploy the models in the SAP Business One client application. For more information about deploying models, see the guide *Working with SAP Business One analytics powered by SAP HANA*, which is located under `\Disk1\Documentation\EndUser` in the product package.

Different language versions of a model cannot coexist. When you redeploy the model in the SAP Business One client, the previous language version is overwritten.

4. Choose the *Initialize* button.
5. In the confirmation message box, choose the *Yes* button.

#### Note

The system performs some checks before starting the initialization. Each check must be in the status as listed in the table below:

Check	Status
The SAP HANA database server (Linux) has enough free disk space for the initialization.	Yes
All user-defined objects have names.	Yes
The name of any user-defined objects is <code>SYSTEM</code> , or <code>SYS</code> , or begins with <code>_SYS_</code> .	No

Check	Status
The name of any user-defined object is the same as that of a certain SAP HANA object of one of the following object types: <i>TABLE</i> , <i>TYPE</i> , <i>SEQUENCE</i> , <i>PROCEDURE</i> , <i>FUNCTION</i> , <i>INDEX</i> , <i>VIEW</i> , <i>MONITOREVIEW</i> , <i>SYSNONYM</i> , and <i>TRIGGER</i> .	No

## Result

The application begins to migrate the company database to the SAP HANA database server. This may take some time, depending on the size of the database.

The *Database Initialization* section displays the status of the initialization process. The initialization status is *New* before the initialization, *In Process* during the initialization, and *Initialized* after the initialization is completed. The status bar in the *Database Initialization* section displays the specific status when the system is migrating tables, or deploying enterprise search, SAP HANA models, and dashboards.

If any error occurs during the initialization, an error message appears in the company log indicating which row in which table the error was encountered.

Depending on your SAP Business One version, the version of the SAP model package is different, as described in the table below:

SAP Business One Version	SAP Model Package Version	Description
<ul style="list-style-type: none"> <li>SAP Business One 8.82 PL07 and higher</li> <li>SAP Business One 9.0 PL03 -PL08</li> </ul>	1.1.4	Contains models for interactive analysis and Pervasive Analytics.
<ul style="list-style-type: none"> <li>SAP Business One 9.0 PL09 and higher</li> <li>SAP Business One 9.1 PL00 and higher</li> </ul>	2.0.0	Provides new models for the financials module, in addition to the old models for version 1.1.4.

## 7.3.2 Reinitializing Databases

You may be required to reinitialize company databases that have already completed the initialization process, for example, when the table structure of your database changes, or when there is a big data difference between the Microsoft SQL Server and SAP HANA databases.

### Caution

When upgrading SAP Business One, you must choose the *Stop* button before performing the upgrade to suspend change tracking on the SAP Business One server. After the upgrade is completed, reinitialize the company databases.

---

## ➔ Recommendation

Define the replication scope before you reinitialize your company database. The reinitialization process migrates only database tables within the replication scope. For more information, see [Defining Replication Scope](#).

## Prerequisite

You have stopped the replication service in the company database that you want to reinitialize.

## Procedure

1. When the initialization status is *Initialized*, choose the *Stop* button. The initialization status changes to *Failed*.
2. Specify the model language.
3. Choose the *Reinitialize* button.

## Result

The software begins re-migrating the company database to the SAP HANA database server. This may take a while, depending on the size of the database.

After the reinitialization process completes, the initialization status is *Initialized*.

## 7.4 Scheduling Data Replication

Data replication ensures that databases on the SAP HANA database server reflect changes to databases on the SAP Business One server as a result of ongoing business operations. The Administration Console offers several options to control when replication occurs.

Certain database tables are replicated to the SAP HANA database by default. You can also add more tables (for example, user-defined tables) to the replication scope. For more information, see [Defining Replication Scope](#).

## Prerequisite

You have initialized the company databases for which you want to schedule data replication on the SAP HANA database server - the initialization status of the companies is *Initialized* in the Administration Console. For more information, see [Initializing Company Databases](#).

## Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).



2. In the panel on the left, click [Companies](#).  
Companies on your SQL servers are displayed in a list on the right.
3. Click the company for which you want to schedule data replication.  
Note that companies on different servers may share the same name. For more information, see SAP Note [1838063](#).
4. In the [Replication Schedule](#) section, do either of the following:
  - If you want to replicate data in near real time, select the [Real-time Replication](#) radio button.
  - If you want to replicate data at regular intervals, select the [Scheduled Replication](#) radio button.  
From the [Frequency](#) dropdown list, select a recurrence interval. If you select 1 day, select a time from the [Start Time](#) dropdown list to specify when the replication starts every day.
5. To apply your settings and start the schedule, choose the [Start](#) button. If you want to stop the replication service later, choose the [Stop](#) button.

## Result

The sync point indicates what data is replicated to the SAP HANA server from the SQL server. The displayed time indicates the cutoff point; data that is persistent on the SQL server before the cutoff point is replicated to SAP HANA. Changes to the data or any new transactions that enter the SQL server after this point in time may or may not exist on the SAP HANA database, depending on the replication schedule.

If any error occurs during data replication, an error message appears in the company log indicating which row in which table the error was encountered.

### 7.4.1 Defining Replication Scope

Depending on their replication priority, your database tables are categorized into one of the following three groups:

Replication Priority	Description
Mandatory	Essential to your business analytics and replicated to the SAP HANA database by default Constitutes the default replication scope
Optional	Can be added to or removed from the replication scope, depending on your analytical needs
Excluded	Automatically excluded from replication; includes tables that are: <ul style="list-style-type: none"> <li>• Irrelevant to the analytics</li> <li>• Without a primary key</li> </ul>


Mandatory database tables include `CUFD`, the source table for user-defined fields. To replicate your user-defined tables to the SAP HANA database, however, you must add them to the replication scope manually. Note that you cannot remove mandatory tables from the replication scope or add the excluded tables to the scope.

## Note

You cannot modify the replication scope when your company database is being initialized or reinitialized. Nor can you export or import configuration files during this time.

## Procedure

To define a replication scope, do the following:

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. In the panel on the left, click [Companies](#).  
Companies on your SQL servers are displayed in a list.
3. Click the company for which you want to define the replication scope.
4. On the company page, click  [Replication Scope](#).
5. In the [Replication Scope Definition](#) window, on the [Optional \(<Table Amount>\)](#) tab, select the tables that you want to replicate to the SAP HANA database and choose the [Save](#) button.

## Recommendation

Use the search bar to look for tables in each table group. Each character entered works as a quick filter and refreshes the search result.

## Note

To discard all changes to the replication scope, choose the [Cancel](#) button.

You can also export your configuration of the optional tables to a file or import a saved configuration file. The configuration file must be located in a predefined location on the SAP HANA server machine.

## Result

The new definition of replication scope takes effect in the next replication cycle even if you change the scope during the process of replication. If some tables are removed from the scope, they will also be deleted from the SAP HANA database.

## 7.5 Monitoring Data Replication

The analytical features depend on complete and uninterrupted data replication from the MS SQL database to the SAP HANA database. If any error occurs during the replication process, you need to take timely action to resolve the issue. Otherwise, your analytical results will be based on outdated or incomplete source data.

To monitor the replication process proactively, SAP Business One analytics powered by SAP HANA uses a monitoring and notification mechanism. The system monitors the following aspects:

- Status of the replication service. For more information about service statuses, see the table in the [Result](#) section below.

- Data differences between the SQL Server database and the SAP HANA database. The system compares the data on both databases and determines whether there are any gaps or differences. The data comparison process starts right after the first replication cycle each day.

**i** Note

Four tables *OCRY*, *OTER*, *OOND*, *OOIR* are designed to have a data difference of 1 row. Therefore, these 1-row data differences are not reported unless there are other data differences.

**i** Note

Migrated user-defined tables are also included in the comparison.

The analytics works with the remote support platform (RSP) to send notifications. For more information, see [Receiving Notifications from the Remote Support Platform](#).

## Error Handling Mechanism

If the replication process encounters errors (for example, loss of connection to the SAP HANA server or the SQL server, SAP HANA running out of memory, DDL operations on the SQL server), the system repeatedly attempts to restart replication within a defined period of time. If the system cannot resume replication after the allocated period of time, the replication service is stopped.

The frequency and duration of the restart attempts are predefined. For more information, see the following sections in [Configuring Data Replication Service Parameters](#):

- *secondsToRetryForConnectionLost*
- *minutesToStopForConnectionLost*
- *secondsToRetryForReplicationCycleFailure*
- *minutesToStopForReplicationCycleFailure*

If the replication service is stopped, after resolving the issue, you must restart the replication process manually. The system will automatically compare the data in the SAP HANA and SQL databases and replicate missing data to the SAP HANA database.

## 7.5.1 Receiving Notifications from the Remote Support Platform

In the case of any errors, change in service status, or data differences, you will receive notification from your remote support platform (RSP). For more information about the RSP, see <http://service.sap.com/smb/sbocustomer/documentation>.

**i** Note

The system monitors all databases that work on a replication schedule, regardless of the databases you selected in the remote support platform (*Configuration* menu).

RSP tasks for the analytics include the following:

- For the replication service: SAP Business One analytics powered by SAP HANA Status Report
- For data comparison: SAP Business One analytics powered by SAP HANA Data Comparison Report

## Procedure

To enable the notification service, do the following:

1. Ensure that you have set up a replication schedule for your company database and started the replication service. For more information, see [Scheduling Data Replication](#).
2. Install or upgrade to patch level 05 or higher of the Remote Support Platform 3.0 for SAP Business One. The installation package is available on SAP Service Marketplace at <http://service.sap.com/swdc>.
3. In the remote support platform, configure the following for either of the tasks listed above:
  - o Your email information
  - o Server address of the Web service `AnalyticsServer`: Enter `<Server Name>:<Port>` for the value.
  - o Task schedule

### Recommendation

Sync the task schedule with the replication schedule of your company database. This ensures timely notification.

4. Approve the task.
5. Repeat steps 3 and 4 for the other task.

## Result

### Replication Service

The status of the replication service is reported as one of the following:

Status	Description
Active	Working normally
Active with Warning	In process, but some errors have occurred
Inactive	Stopped unexpectedly; requires prompt action to rectify errors
In Maintenance	Stopped manually

You will receive email notification in the following scenarios:

- The status of the replication service changes.  
In the *Status* field of the email notification, the current status is displayed followed by the previous status in brackets. For example: `Active [In Maintenance]` indicates that the status of the replication service has changed from `In Maintenance` to `Active`.
- A new error arises while the replication service is continually attempting to recover the replication process.

### Data Comparison

You will receive email notification if any data differences are found after running the daily data comparison process. For more information, see [Monitoring Data Replication](#).

#### Note

The system conducts data comparison only if the status of the replication service remains as `Active`.

## 7.5.2 Comparing Data Between the Microsoft SQL Server and SAP HANA Databases

In addition to the automatic data comparison process that is run daily, you can manually compare data between SQL and SAP HANA databases to make sure the replication service is working properly.

### Note

Before starting to compare data between the Microsoft SQL Server and SAP HANA databases, you need to make sure there is no transaction being added or changed in the SQL server database. Otherwise, the data comparison cannot render an accurate result.

If you find data differences in the *Data Comparison* window, start the replication service at a time when there is no transaction being added or changed in the Microsoft SQL Server database, stop the replication service, and use the comparing function again. For more information, see [Scheduling Data Replication](#).

If you cannot narrow down the differences using the above method, you need to reinitialize the company database. For more information, see [Reinitializing Databases](#).

### Prerequisite

You have stopped the replication service in the company database for which you want to compare data. In the Administration Console, the status of *Replication Schedule* for the particular company database is *Not started*. For more information, see [Scheduling Data Replication](#).

### Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. Go to the *Companies* tab page and, under the appropriate SQL Server, click the company name of the company for which you want to compare data.

Note that companies on different servers may share the same name. For more information, see SAP Note [1838063](#).

3. In the *Replication Schedule* section, choose the *Data Compare* button.
4. In the confirmation message box, choose the *Yes* button.

The *Data Comparison* window appears, displaying data from migrated SAP Business One tables.

- o The table name
- o The number of rows for each table in the Microsoft SQL Server database
- o The number of rows for each table in the SAP HANA database
- o The difference between the two numbers

### Note

Migrated user-defined tables are also included in the comparison.

The records are displayed in the following order:

1. Tables with data differences are displayed on top.

## Note

Four tables *OCRY*, *OTER*, *OOND*, *OOIR* are designed to have a data difference of 1 row.

2. Tables with no data differences are displayed in descending order according to the number of rows in the Microsoft SQL Server database.

## 7.5.3 Typical Errors

This section discusses some typical errors that may occur in SAP Business One analytics powered by SAP HANA and their possible causes. If applicable, resolutions are also provided for your reference.

**com.microsoft.sqlserver.jdbc.SQLServerException: Snapshot isolation transaction failed in database <Database Name> because the object accessed by the statement has been modified by a DDL statement in another concurrent transaction since the start of this transaction. It is disallowed because the metadata is not versioned. A concurrent update to metadata can lead to inconsistency if mixed with snapshot isolation.**

### Explanation

The analytics uses SQL database snapshots as the ETL (Extract, Transform, and Load) source. Updating the metadata that is accessed under snapshot isolation may cause inconsistencies. For more information, refer to Microsoft documentation at <http://msdn.microsoft.com/library>.

### Resolution

The RSP will send you an email notification about the error. Meanwhile, the replication service continually attempts to restart the replication cycle.

- If your DDL operations end within a defined period of time, the replication service resumes activity after the DDL operations finish.
- If your DDL operations do not end within the defined period of time, the replication service automatically stops and the RSP will send you an email notification about the error. After you have finished updating the metadata, you need to restart the replication process manually.

## Note

If the replication process discontinues for a lengthy period, such as 48 hours, you may not be able to restart the replication. Instead, an error message is displayed to inform you of a data gap and you need to reinitialize the company database.

For more information, see the section *minutesToStopForReplicationCycleFailure* in [Configuring Data Replication Service Parameters](#).

## [129]: transaction rolled back by an internal error: Out of memory

### Explanation

Your SAP HANA server has run out of memory.

### Resolution

Contact your SAP HANA database administrator.

## SAP DBTech JDBC: Cannot connect to jdbc:sap://<Host Name>:<Port> [Cannot connect to host <Host Name>:<Port> [Connection refused], -813.].

### Explanation

Connection to the SAP HANA server is lost.

### Resolution

Contact your SAP HANA database administrator.

## The TCP/IP connection to the host <Server Address>, port <Port> has failed. Error: "Connection refused. Verify the connection properties, check that an instance of SQL Server is running on the host and accepting TCP/IP connections at the port, and that no firewall is blocking TCP connections to the port."

### Explanation

Your SQL server is unavailable.

### Resolution

Check the following:

- The SQL Server and SQL Server Browser services are running.
- You have enabled remote connections on the SQL Server instance that you want to connect to.
- The firewall allows traffic to the SQL Server and the SQL Server Browser service.

For more information, refer to Microsoft documentation at <http://msdn.microsoft.com/library>.

## 7.5.4 Configuring Data Replication Service Parameters

In some cases, you may need to configure the parameters of the replication service. This section describes these parameters and their configuration.

### Caution

Improper configuration may cause performance issues or even lead to system crashes. It is strongly recommended that you test configured parameters first in a development environment.

---

By default, the configuration file `rep-config.xml` is located under `/opt/sap/SAPBusinessOne/tomcat/conf`.

**i** Note

After changing any of the parameters, you must restart SAP Business One analytics powered by SAP HANA to apply the changes.

## **secondsToRetryForConnectionLost**

### **Purpose**

This parameter defines the time interval between the system's attempts to reconnect if the replication loses connection to the SAP HANA server or the SQL server. The time interval is measured in seconds.

### **Use Case**

You want the reconnection attempts to be more frequent or less frequent. For more information, see [Monitoring Data Replication](#).

### **Valid Value**

Zero or a positive integer. Note that the value cannot be greater than the `minutesToStopForConnectionLost` value converted to seconds.

Default value: 10

## **minutesToStopForConnectionLost**

### **Purpose**

This parameter defines the duration of the system's continual attempts to reconnect if the replication service loses connection to the SAP HANA server or the SQL server. The duration is measured in minutes.

**i** Note

If additional errors occur during the same replication cycle, the time at which the system attempts to restart the replication includes the time the system uses to attempt to reconnect to the server. For example, the system attempts to restart replication within 4 hours; within the 4 hours, it first makes an attempt for 3 hours to reconnect to the SAP HANA server. Then only 1 hour is designated to recover from the other errors.

If the replication service does not recover from connection loss during the defined duration, the replication service stops automatically.

For more information, see the section *secondsToRetryForConnectionLost*.

### **Use Case**

You want a longer or shorter duration of reconnection attempts. For more information, see [Monitoring Data Replication](#).

### **Valid Value**

Zero or a positive integer that is not greater than the `minutesToStopForReplicationCycleFailure` value.



---

Default value: 240

## **secondsToRetryForReplicationCycleFailure**

### **Purpose**

This parameter defines the time interval between the system's attempts to restart a failed replication cycle. The time interval is measured in seconds.

### **Use Case**

You want the restarting attempts to be more frequent or less frequent. For more information, see [Monitoring Data Replication](#).

### **Valid Value**

Zero or a positive integer. Note that the value cannot be greater than the `minutesToStopForReplicationCycleFailure` value converted to seconds.

Default value: 2

## **minutesToStopForReplicationCycleFailure**

### **Purpose**

This parameter defines the duration of the system's continual attempts to restart a failed replication cycle. The duration is measured in minutes.

If the replication service does not recover from the errors that caused the failure during the defined duration, the replication service stops automatically.

For more information, see the section *secondsToRetryForReplicationCycleFailure*.

### **Use Case**

You want a longer or shorter duration for restart attempts. For more information, see [Monitoring Data Replication](#).

### **Valid Value**

Zero or a positive integer that is not less than the `minutesToStopForConnectionLost` value.

Default value: 240

## **readPageSize**

### **Purpose**

This parameter defines the maximum rows of record the replication service reads from each SQL server table at a time. If the number of records in the table is within the defined limit, all rows are read at once. If the table has more records than the maximum value, it takes more than one instance to read the entire table.

 **Example**

The `readPageSize` value is set as 10000. If a table has more than 10000 rows of record, for example, 23000 rows, it takes  $\text{Round}(23000/10000 + 0.5) = 3$  times to read the entire table.

 **Note**

If replicated data contains oversized blobs or clobs, a high `readPageSize` value may cause the analytics to run out of memory. For more information, see the sections *maxBlobLength* and *maxClobLength*.

**Use Case**

- If you are concerned that the maximum record size puts too much pressure on your SQL server, you can define a smaller value.
- If you are concerned that the maximum record size restrains your SQL server from working at its full capacity, you can define a greater value.

 **Recommendation**

When defining this parameter, take into consideration the `writeBatchSize` value to optimize replication performance. If the `writeBatchSize` value is too low compared with the `readPageSize` value, the replication performance can be compromised because of the long wait time for the SAP HANA server. Similarly, if the `writeBatchSize` value is too high, the wait time becomes too long for the SQL server.

Furthermore, if there is only one SQL server, it is recommended that the `writeBatchSize` value is not smaller than the `readPageSize` value. If there is more than one SQL server, however, you can define a smaller `writeBatchSize` value.

**Valid Value**

A positive integer.

Default value: 10000

**writeBatchSize****Purpose**

This parameter defines the maximum rows of record the replication service writes to the SAP HANA database at once. For more information, see the section *readPageSize*.

**Use Case**

- If you are concerned that the maximum record size puts too much pressure on the SAP HANA server, you can define a smaller value.
- If you are concerned that the maximum record size restrains the SAP HANA server from working at its full capacity, you can define a greater value.

**Valid Value**

A positive integer.

Default value: 10000

---

## maxBlobLength

### Purpose

This parameter restricts the size of a blob (binary large object). If a blob is larger than the defined size, it is not replicated. This parameter is measured in bytes.

### Use Case

You may not want to replicate image data, which usually do not contribute to the analytics.

### Valid Value

Any number. If the value is zero or negative, blobs are not replicated at all.

Default value: 524288000

## maxClobLength

### Purpose

This parameter restricts the size of a clob (character large object). If a clob is larger than the defined size, it is not replicated. This parameter is measured in bytes.

#### Note

The nText data type on the SQL server is converted into nClob on SAP HANA.

### Use Case

You want to restrict the sizes of clobs (for example, attachments).

### Valid Value

Any number. If the value is zero or negative, clobs are not replicated at all.

Default value: 524288000

## maxDiagnosticHistoryReportSize

### Purpose

This parameter defines the number of replication history records you want to keep. An HTML file is generated for each replication cycle. By default, these files are stored under

`/opt/sap/SAPBusinessOne/tomcat/temp/replication-dump/<SQL Company Database Name>/`.

### Use Case

You want to store more or less reports. For example, you have set high values for `secondsToRetryForReplicationCycleFailure` and `minutesToStopForReplicationcycleFailure`. This may lead to a large amount of reports of the same replication cycle. In this case, you may want to define a higher value so that previous reports are not wiped out.

## Valid Value

Zero or an integer. If the value is zero or negative, no history records are kept.

Default value: 100

## paginationGetChanges

### Purpose

This parameter determines whether the system is to paginate already migrated tables during a replication cycle. Note that this setting is irrelevant to new tables on the SQL server, which are always paginated.

After enabling this setting, the `readPageSize` value also applies to the old tables. For more information, see the section *readPageSize*.

### Use Case

Some tables have already been migrated to the SAP HANA database. During a certain period of time, for example, a promotion period, there are more than the usual number of transactions. This means many updates occur to the old tables between replication cycles. In such cases, you may want to enable this setting to help prevent the analytics from running out of memory.

On the contrary, if there are relatively few updates to existing tables between replication cycles, enabling this setting may compromise replication performance.

## Valid Value

**True** (enable) or **False** (disable).

Default value: `False`

## transactionCVThreshold

### Purpose

This parameter defines the threshold for the SQL change tracking version difference between the version used for the current replication and the version used for the last replication.

If the difference is below or equal to the threshold value, replication runs in an SQL server transaction, which guarantees data consistency. If the difference exceeds the threshold value, tables are replicated through different connections; in other words, a high throughput takes a relatively longer time to finish replication (for example, 10 minutes for 60000 transactions).

This parameter is used to balance data consistency and out-of-memory risks. A larger value increases the out-of-memory risk.

### Use Case

You have a large number of transactions to replicate, for instance because of high business throughputs or a long interval between two replication cycles. In this case, you may want to raise the threshold.

## Valid Value

Zero or an integer. If the value is zero or negative, the risk of data inconsistency remains high.

Default value: 5000

---

## 7.6 Backing Up and Restoring Company Databases

You can use the Administration Console to back up and restore company databases on the SAP HANA database server.

### 7.6.1 Backing Up Databases

#### Prerequisite

Database initialization or replication is not in process.

#### Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. On the homepage, in the *SAP HANA Database Backup and Restore* section, choose the *Back Up and Restore* button.

The *SAP HANA Database Backup and Restore* window appears.

3. In the *Backup Name* field, specify a name to identify the backup, and then choose the *Back Up* button.

#### Note

The *Location* box shows the directory in which the backup is stored. This directory is designated by the system and cannot be modified.

4. In the confirmation window, review the databases you are going to back up, and choose the *Yes* button.

### 7.6.2 Restoring Databases

#### Note

You cannot restore databases from backup files created from lower releases of the software.

#### Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. On the homepage, in the *SAP HANA Database Backup and Restore* section, choose the *Backup and Restore* button.

The *SAP HANA Database Backup and Restore* window appears.

3. Select the backup that you want to restore, and choose the *Restore* button.
4. In the confirmation window, review the databases you are going to restore, and choose the *Yes* button.

---

## 7.6.3 Deleting Backups

### Procedure

1. Log on to the Administration Console. For more information, see [Starting the Administration Console](#).
2. On the homepage, in the *SAP HANA Database Backup and Restore* section, choose the *Back Up and Restore* button.

The *SAP HANA Database Backup and Restore* window appears.

3. Select the backup that you want to delete, and choose the *Delete* button.
4. In the confirmation window, choose the *Yes* button.

---

## 8 Enabling Analytical Features in SAP Business One

After initializing company databases on the SAP HANA database server, you can enable the analytical features powered by SAP HANA in the SAP Business One client application.

### Prerequisites

- You have initialized the company databases for which you want to schedule data replication to the SAP HANA database - the initialization status of the companies is *Initialized* in the Administration Console. For more information, see [Initializing Company Databases](#).
- You have the necessary SAP Business One authorizations.

#### Note

To grant the necessary authorizations, from the SAP Business One *Main Menu*, choose *Administration* → *System Initialization* → *Authorizations* → *General Authorizations* → *General* → *SAP HANA Database Client Enablement*.

### Procedure

1. Start SAP Business One.
2. To log on, enter your SAP Business One user ID and password.
3. From the SAP Business One *Main Menu*, choose *Administration* → *System Initialization* → *General Settings*.
4. On the *Services* tab of the *General Settings* window, select the *Enable Analytics Powered by SAP HANA* checkbox.

### Result

After enabling the analytical features powered by SAP HANA, you can do the following in SAP Business One:

- Perform enterprise searches based on the SAP HANA database using the SAP Business One search function.
- Access dashboards based on the SAP HANA database. Dashboards based on the original SAP Business One database are no longer available.
- Generate Crystal reports based on the SAP HANA database. Crystal reports based on the original SAP Business One database are still available.
- Perform Microsoft Excel interactive analysis using the new menu entry *Interactive Analysis* from the SAP Business One client menu.
- Import and deploy customized SAP HANA models.

---

You can disable the analytical features powered by SAP HANA by deselecting the *Enable Analytics Powered by SAP HANA* checkbox on the *Services* tab of the *General Settings* window.



# 9 Managing Security

## 9.1 Deployment

SAP Business One analytics powered by SAP HANA is deployed on a machine with a Linux operating system. The application contains a Tomcat server and works with an SAP HANA database server. When you install SAP HANA, a non-root system user is created. The database server and the Tomcat server run with the same non-root system user.

Once the Tomcat server is installed and deployed, it is necessary to protect the entire installation against any unauthorized access to prevent unintended or malicious modification. By default, only the database user has read, write, and execute permissions for the Tomcat directory. Other system users have read permission only.

To initialize company databases on the SAP HANA database server, SAP provides a Web-based Administration Console. The Administration Console is a security sensitive application, and access is limited to the Linux root user. We recommend that the root user configure Tomcat to allow the Administration Console Web access to the local machine only (by default it is not configured). For more information about setting a request filter, see [Request Address Filter](#) on the Apache Tomcat Web site.

## 9.2 Transport Level Security

If you are using SAP Business One 8.82 PL7, PL8, or PL9, the preparation necessary for basic HTTPS support is not done during the installation or upgrade of SAP Business One analytics powered by SAP HANA. The system user must use a server-side certificate and configure Tomcat to make HTTPS available. To configure HTTPS, proceed as follows:

1. To create a certificate keystore, enter the following command:

```
%JAVA_HOME%/bin/keytool -genkey -alias tomcat -keyalg RSA -validity 720 -keystore <your_keystore_filename>
```

This step creates a new keystore containing a single self-signed certificate. If you want to use the self-signed certificate, proceed to step 3.

2. If you want to create a certificate authority (CA) certificate, do the following:

1. Create a local certificate signing request by entering the following command:

```
%JAVA_HOME%/bin/keytool -certreq -keyalg RSA -alias tomcat -file certreq.csr -keystore <your_keystore_filename>
```

2. Submit the *certreq.csr* file to the certificate authority. In return, you receive a certificate.

3. To import the chain certificate to your keystore file, enter the following command:

```
Keytool -import -alias root -keystore <your_keystore_filename> -trustcerts -file <filename_of_the_chain_certificate>
```

4. To import the new certificate, enter the following command:

```
Keytool -import -alias tomcat -keystore <your_keystore_filename> -file <your_certificate_filename>
```

### 3. Configure Tomcat.

Find the connector element in `$CATALINA_HOME/conf/server.xml`, uncomment and modify this element.

```
<Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true"
    maxThreads="150" scheme="https" secure="true"
    clientAuth="false" sslProtocol="TLS"
keystoreFile="<your_keystore_file_location>/<your_keystore_filename>"
keystorePass="<your_keystore_password>"/>
```

#### Note

If you use the self-signed certificate, a Web browser-based client raises a security warning when connecting for the first time to SAP Business One analytics powered by SAP HANA. We recommend that you let the browser accept this certificate for future use so that such warnings are no longer issued. If you purchase certificates issued by a well-known certification authority, this situation does not arise.

## 9.3 User Security on the SAP HANA Database Server

SAP Business One analytics powered by SAP HANA relies on an SAP HANA database server. You must ensure user security on the SAP HANA database server.

For more information, see *SAP HANA Security Guides* on SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).

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# 10 Troubleshooting

If SAP Business One analytics powered by SAP HANA does not work as expected, you can check the following troubleshooting information to identify your issues and find solutions, before contacting technical support.

For more information, see [Configuring Data Replication Service Parameters](#).

## Fixing License Server Errors

If the SAP Business One license server fails, the connection between the SAP Business One server and SAP HANA database server is broken. As a result, you cannot use the analytical features powered by SAP HANA in SAP Business One.

To fix license server errors, try either of the following:

- Reboot the license server.
- In the Administration Console, modify the license server parameters. For more information, see [Starting the Administration Console](#).

## Fixing License Type Errors

This application does not support all SAP Business One license types. If you use an unsupported license to log on to the SAP Business One client, the system reports “*Cannot connect to SAP HANA Server*”, indicating you cannot use the SAP HANA-based analytics.

Ensure you are using one of the supported license types listed in [License Requirements](#).

## Avoiding Disk Space Full Caused by SAP HANA Log Files

When the SAP HANA database server is running, depending on the size of company databases and the frequency of updates, database log files can grow to occupy too much disk space. This may cause the application to stop working.

To avoid this issue, use the Administration Console to back up databases from time to time, which reduces the size of log files.

For more information, see [SAP In-Memory Database – Backup & Recovery Guide](#) on SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).

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## Cleaning Up the SAP HANA Log Backup Folder

If the log backup folder fills up, SAP HANA will stop working. To prevent this from happening, the database administrator should do the following:

- Set *log\_mode* as *normal*, and set *enable\_auto\_log\_backup* as *yes*. For more information about the log modes and automatic log backup, see the *Log Backup Options* section in the *SAP HANA Administration Guide* on SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).
- Allocate more disk space to the log backup folder. The log backup folder is set in *basepath\_logbackup*. For more information about the log backup folder, see the section *Default Destination for the Log Backups* in the *SAP HANA Administration Guide* on SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).
- In the log backup folder, remove the logs that are too old to be used for recovery.

For more information about log area backup, see the *SAP HANA Administration Guide* on SAP Help Portal at [http://help.sap.com/hana\\_platform](http://help.sap.com/hana_platform).

## Fixing Java Heap Issues

When initializing large-sized company databases in the Administration Console, you may encounter a “Java heap” issue.

The Java heap is the part of the memory where blocks of memory are allocated to objects and freed during garbage collection. Use the *JAVA\_OPTS* environment variable to specify the maximum allowed Java heap size. By default, the value is set to *JAVA\_OPTS=-Xmx4096m*.

To fix this issue, set *JAVA\_OPTS* to a higher value, and then restart the Tomcat server.

## Turning on Trace and Log for Microsoft Excel Interactive Analysis

Problems may arise when you perform Microsoft Excel interactive analysis. To analyze the cause of problems, you can turn on ODBO trace and log in Microsoft Excel to generate a log file, which provides details for the OLE DB and MDX API and the operation of the SAP HANA client layer.

To turn on trace and log for Microsoft Excel Interactive Analysis, do the following:

1. In Microsoft Excel, choose *Data* → *From Other Sources* → *From Data Connection Wizard*.
2. In the *Data Connection Wizard* window, select *Other/Advanced*, and choose the *Next* button.
3. On the *Provider* tab of the *Data Link Properties* window, select *SAP HANA MDX Provider*, and choose the *Next* button.
4. On the *Advanced* tab, select *Enable ODBO provider tracing*. Specify a location to store the log file and choose the *OK* button.

The application generates a log file in the specified location to assist with troubleshooting.

## Setting Connection Configuration & Timeout Variables

The application provides environment variables that you can use to configure connections and timeout settings. You may need to set these variables to fix related issues.

If you want variable settings to be effective not only for the current session, you must add them to the */opt/sap/SAPBusinessOne/tomcat/bin/B1AStartup.sh* file.

The following table provides an overview of the variables and their default values.

Variable	Description	Default Value
CONNECTION_MAX_ACTIVE	Specifies the maximum number of active threads for the connection pool	1000
CONNECTION_MAX_IDLE	Specifies the maximum number of idle threads for the connection pool	10
CONNECTION_MAX_WAIT	Specifies the maximum waiting time	5000 (microseconds)
LICENSE_CONNECTION_TIMEOUT	Specifies the amount of time, in seconds, in waiting for the license server connections	6 (seconds)
RESTORE_TIMEOUT	Specifies the amount of time in waiting for database restoration to complete If the restoration is not completed within the specified time, the application stops the process.	2 (minutes) if backup file size < 10GB; 5 (minutes) if 10GB ≤ backup file size < 100GB; 10 (minutes) if 100GB ≤ backup file size < 1TB; 20 (minutes) if backup file size ≥ 1TB.
MIGRATION_CONNECTION_MAX_ACTIVE	Specifies the maximum number of active threads for the connection pool during the database initialization process	100
MIGRATION_CONNECTION_MAX_IDLE	Specifies the maximum number of idle threads for the connection pool during the database initialization process	10
MIGRATION_CONNECTION_MAX_WAIT	Specifies the maximum waiting time during the database initialization process	5000 (microseconds)

## Changing Logging Levels in the Tomcat Server

If SAP Business One analytics powered by SAP HANA does not work as expected, the system administrator may need to change to a lower logging level in the Tomcat server (Linux server) to get more information about the system's behavior.

### Note

The log file `analyticService.log` is located by default under `/opt/sap/SAPBusinessOne/tomcat/logs`.

To change the logging levels in the Tomcat server, do the following:

1. Open the logging configuration file `log4j.xml` using a text editor.

### Note

By default, the configuration file is located under `/opt/sap/SAPBusinessOne/tomcat/conf`.

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2. In the configuration file, change the logging level according to the standards of Apache log4j. For more information, see the Apache documentation at <http://logging.apache.org>.
  3. Restart SAP Business One analytics powered by SAP HANA. For more information, see the following troubleshooting item.

## Stopping and Restarting SAP Business One analytics powered by SAP HANA

Sometimes, the system administrator may need to stop and restart SAP Business One analytics powered by SAP HANA. For example, when you have changed the log level in the Tomcat server.

To stop and restart SAP Business One analytics powered by SAP HANA, do the following:

1. Log on to the Linux server as `ndbadm`.
2. To stop SAP Business One analytics powered by SAP HANA, in the Linux server, in `/opt/sap/SAPBusinessOne/tomcat/bin`, run `./B1AShutdown.sh`

To start SAP Business One analytics powered by SAP HANA, in the Linux server, in `/opt/sap/SAPBusinessOne/tomcat/bin`, run `./B1AStartup.sh`

### Note

The `/opt/sap/SAPBusinessOne` folder is the default installation folder for SAP Business One analytics powered by SAP HANA.

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## Appendix Integrated Third-Party Products

SAP Business One analytics powered by SAP HANA integrates with various third-party products, some of which are licensed by SAP, while others are not. The table below lists these third-party products:

Third-Party Product	Supplier
InstallAnywhere 2011 Enterprise	Flexera Software LLC
SAP HANA appliance software platform edition 1.0 SPS 07	SAP AG

[www.sap.com/contactsap](http://www.sap.com/contactsap)

**Material Number**

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