Administrator's Guide

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SAP Business One 10.0 FP 2105, version for SAP HANA
SAP HANA Enterprise Edition 2.0 SPS 05 Rev.050
SAP HANA Client Version 2.7.26
Document Version: 1.6– 2021-06-07

SAP Business One Administrator's Guide, version for SAP HANA

All Countries



Typographic Conventions

Type Style	Description
Example	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.
Example	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.
`Example`	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	Change
1.0	2019-10-30	First version.
1.1	2020-01-06	• Section 2.1: SAP Business One 10.0, version for SAP HANA supports SLES 15 SP1 (x86_64). • Section 3.3.1: Browser access service is supported.
1.2	2020-04-10	• Section 1.2.1: Two new Linux-based server components Electronic Document Service and API Gateway Service are added. • Section 1.4: A new documentation How to Work with SAP Business One API Gateway is referenced in the related documentation table. • Section 2.1: SAP Business One 10.0, version for SAP HANA supports SAP HANA Enterprise Edition 2.0 SPS 04 Revision 045. • Section 2.2: Excel Report and Interactive Analysis supports Microsoft Excel Office 365. • Section 3.1 o You can install Electronic Document Service using SAP Business One Server Component Setup Wizard. Electronic Document Service depends on the existence of the Service Layer. o You can install API Gateway Service using SAP Business One Server Components Setup Wizard. • Section 3.1.2.1: A new section about the installation with multiple tenant databases. • Section 4: As of 10.0 PL02, SAP Business One, version for SAP HANA supports SAP Crystal Reports 2016 SP7, version for the SAP Business One application. • Section 7.1.6: Electronic Document Service can be added in the SLD. • Section 8.2.1.1.1: Installing Windows PowerShell 5 or the higher version is a prerequisite for installing the SLD Agent service. • Section 10.4.2.2.2: A new section about configuring the SLD connection with a secure channel (LDAPs). • Section 10.4.3: Three new sections （10.4.3.1, 10.4.3.2 and 10,4.3.3） about security certificate verifications for the client components, Service Layer and Web Client are added. • Section 10.5.2: A new section about data encryption. • Section 10.7.4: A new section about the security of Browser Access. • Appendix 1: For SLES 15 SP1, you must install `Python 2 Module` to get the packages of `python-gtk` and `python-openssl`. • Appendix 5:

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Version	Date	Change
		o The default port for Electronic Service is `7299`. o The default port for Authentication Service is `60010`. o The default part for API Gateway Service is `60000`.
1.2.1	2020-07-01	• Section 7.4: o You can enable external access to Web Client for SAP Business One. o Section 7.4.3.1: You can configure a nginx reverse proxy. • Appendix 1: We recommend that you disable AppArmor to avoid some folder access issues.
1.3	2020-09-11	• Section 2.1: SAP Business One 10.0, version for SAP HANA supports SAP HANA Enterprise Edition 2.0 SPS 05 Revision 050. • Section 3.4: To use Excel Report and Interactive Analysis, you need to install the client of SAP HANA Enterprise Edition 2.0 SPS Rev 036 on the Windows machine. • Section 10.4.2: You can change TLS version or cipher suites according to your security requirements for the following components: o Components in Shared Tomcat o Service Layer o Workflow o Browser Access • Section 10.8.2: The procedure for setting up the encryption connection between the license server and SAP HANA database has some changes. • Section 10.8.3: The procedure for setting up the encryption connection between Service Layer and SAP HANA database has some changes. • Section 10.10: A new section about security-relevant logging and tracing. • Appendix 1: o Adding a new prerequisite library for Web Client: `libcap-progs` o Removing a prerequisite library for the SLD: `phthon-crypto`
1.4	2020-11-09	• Section 3.1.2: The steps of the license server installation are changed. You need to enter the virtual address when selecting the high availability node. • Section 3.1.3: The parameter `LICENSE_SERVER_ACTION` is removed and a new parameter `LICENSE_SERVER_VIRTUAL_URL` is added. • Section 7.1.6: When adding License Manager in the SLD, if you have enabled high availability, you need to specify the URL as **`https://<Virtual IP Address>:<port>/LicenseControlCenter`**. • Section 10.10: The logging information about the System Landscape Directory (SLD), Job Service and Mobile Service is added. • Appendix 1: A new third-party library `Libicu60_2` is added for the Electronic Document Service.

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Version	Date	Change
1.5	2021-03-16	• Section 1.3: As of 10.0 FP 2102, the installation package and upgrade package are unified to a single product setup package. • Section 2.1: SAP Business One 10.0, version for SAP HANA supports SLES 15 SP2 (x86_64).You need to upgrade the Linux Kernel to version 5.3.18-24.24.1 or newer. • Section 3.1: When a new demo database is required, you need to navigate to the SAP Help Portal to download the demo database and import it into SAP Business One manually. • Section 3.1.3: o The following new parameters are added: o `HANA_SYSTEM_USER_ID` o `HANA_SYSTEM_USER_PASSWORD` o The following parameter is removed: o `B1ServerDemoDB_XX` • Section 5: The Demo Databases option is removed from the uninstallation procedure. • Section 6.1: The following major or minor releases are currently supported for upgrade to SAP Business One 10.0 FP 2102, version for SAP HANA: o SAP Business One 9.2 PL00-PL11, version for SAP HANA o SAP Business One 9.3 PL00-PL14, version for SAP HANA o SAP Business One 10.0 PL00-FP 2011, version for SAP HANA • Section 7.1.8: A new section about working with audit logs. • Section 7.3: A new section about deploying demo databases. • Section 10.6.3: The following System Priviledges are added: o `BACKUP ADMIN` o `BACKUP OPERATOR` • Section 10.11: o A new section about configurating services running as low-privileged operating system users on Windows servers. o A new section about upgrading SAP JVM. • Appendix 1: Two new third-party libraries are added: o `dos2unix` o `libxml2` • Appendix 6: A new appendix about a list of log file locations for SAP Business One components.
1.6	2021-06-07	• Section 2.1: SAP Business One, version for SAP HANA supports SAP HANA Client Version 2.7.26. • Section 3.1.2:

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Version	Date	Change
		o During the SAP Business One server components installation, the hostname is prefilled with the full qualified domain name (FQDN) in the Network Address window. o When you install the Web Client, Mobile Service and Electronic Document Service using the SAP Business One Linux Components Wizard (default path:\Packages.Linux\ServerComponents\), you do not need to enter the database credentials. If only one database instance is registered in the SLD, the components are automatically bound to the database instance; if multiple database instances are registered in the SLD, you need to choose one database instance from the dropdown list.

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1 Introduction

The SAP Business One Administrator's Guide, version for SAP HANA provides a central point of guidance for the technical implementation of SAP Business One, version for SAP HANA. Use this guide for reference and instructions before and during the implementation project.

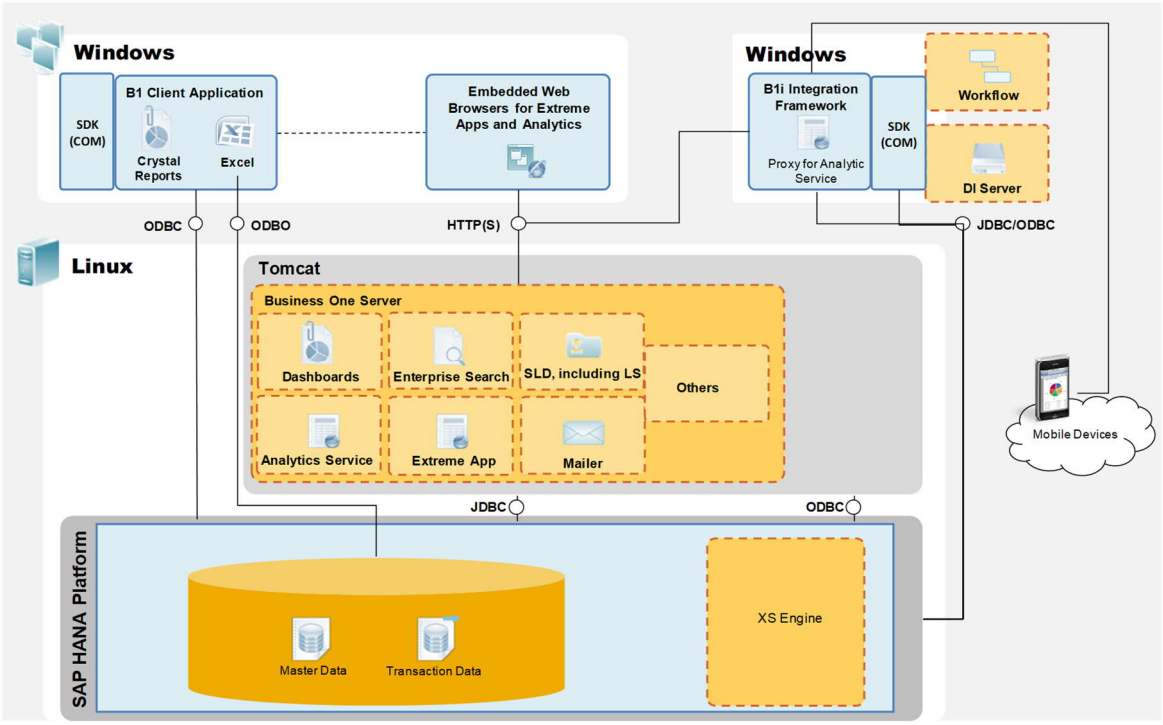
1.1 Application Architecture

SAP Business One, version for SAP HANA is a client-server application that comprises a fat client and a database server.

The SAP Business One schema not only stores data, but also uses triggers, as well as views, especially for reporting and upgrade purposes.

As more customers require Business Intelligence (BI), SAP introduced the SAP 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.

The following figure provides an overview of the architecture of SAP Business One, version for SAP HANA:



SAP Business One, version for SAP HANA Architecture

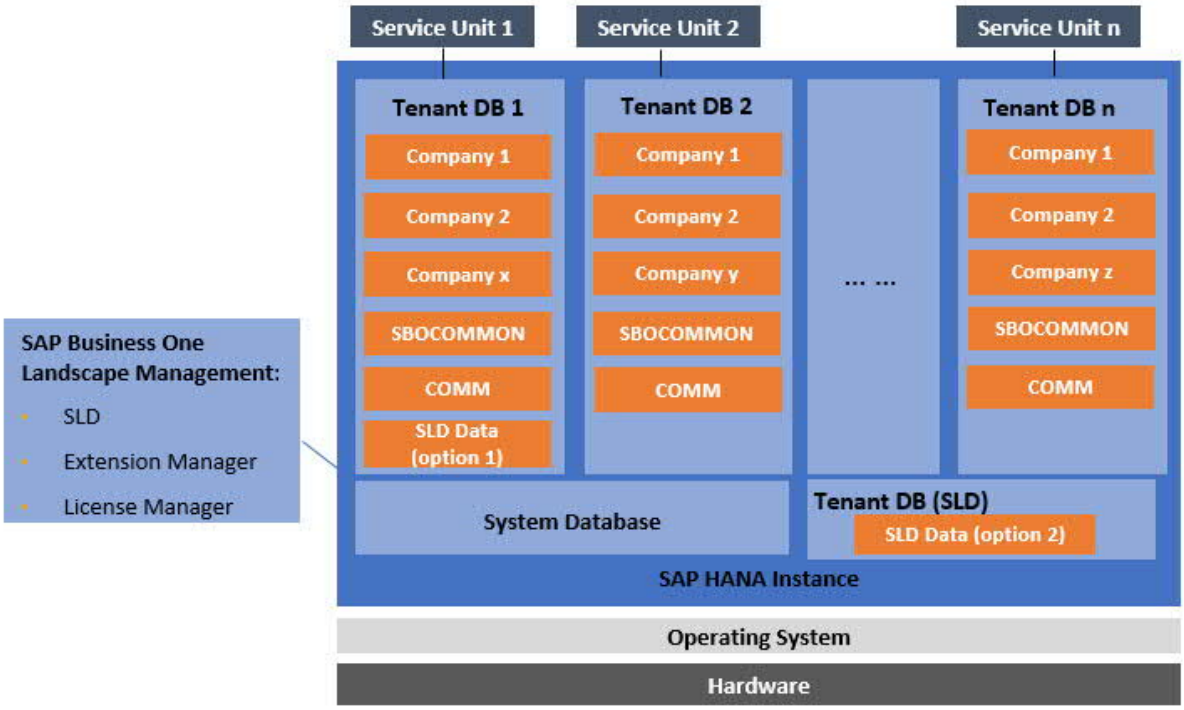
As of release 10.0 PL00, SAP Business One, version for SAP HANA supports SAP HANA tenant databases, which represent the basis for multitenancy in SAP HANA. A tenant database system contains one system database and

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can contain multiple tenant databases. The system database keeps the system-wide landscape information and provides configuration and monitoring system-wide. The tenant databases are, by default, isolated from each other in regards to application data and user management. Each tenant database can be backed up and recovered independently from one another. Since all tenant database are part of the same SAP HANA database management system, they all run with the same SAP HANA version (version number). For more information about SAP HANA tenant databases, see SAP Note 2096000.

When installing SAP Business One, version for SAP HANA, you may install the components on different tenant databases.

The following figure illustrates the architecture of SAP Business One, version for SAP HANA with multiple tenant databases:



SAP Business One, version for SAP HANA with Multiple Tenant Databases Architecture

When installing SAP Business One, version for SAP HANA with the multiple tenant databases, pay attention to the following points

- All tenant databases share the same system database and run with the same SAP HANA version.
- One tenant database corresponds to one service unit.
- All service units share the same SAP Business One Landscape Management.
- All service units either share the same SLD data installed in the first tenant database (option 1) or share the SLD data in a specific tenant database for the SLD (option 2)
- The following SAP Business One components cannot be shared by different service units:
  - Mobile
  - Analytics Platform
  - Service Layer

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- App Framework
- Web Client
- Electronic Document Service
- Job Service

You need to install these components individually for each service unit.

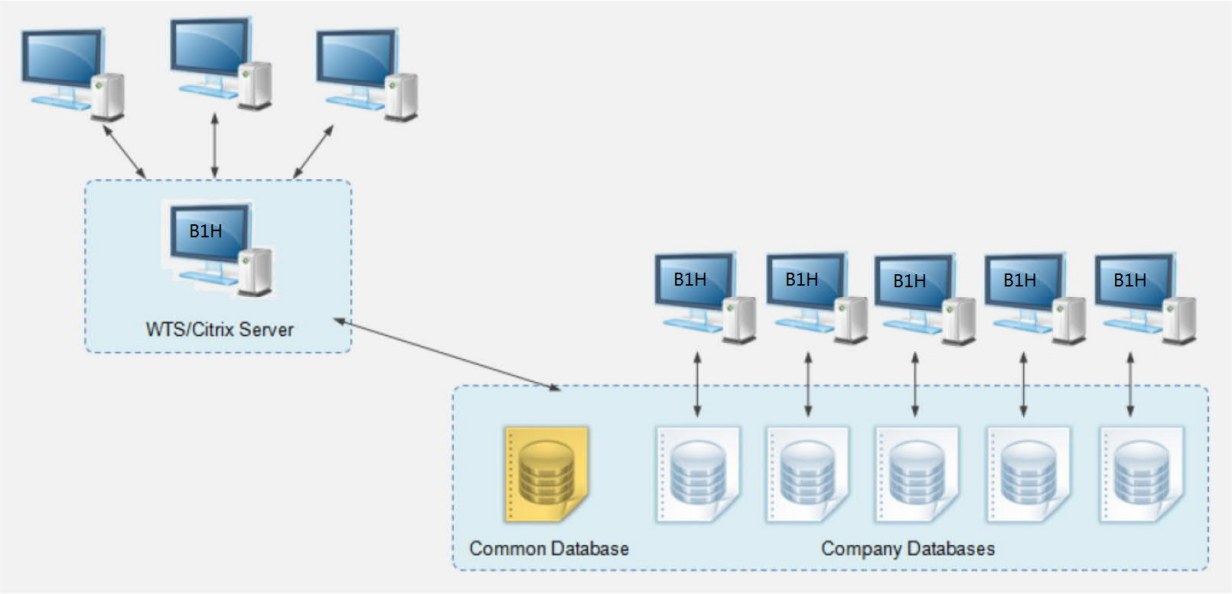
For more information about installing SAP Business One, version for SAP HANA with multiple tenant databases, see Installation with Multiple Tenant Databases.

1.2 Application Components Overview

This section provides a description of the software components of SAP Business One, version for SAP HANA and how they are used by the business processes of SAP Business One.

1.2.1 Server Components

The following figure illustrates the server architecture of SAP Business One, version for SAP HANA:



SAP Business One Server Architecture, version for SAP HANA

Some server components are essential to the system landscape and are thus mandatory, while the others are optional and you can install them if there's a business need.

Similarly, some of the server components are Linux-based, while the others are Windows-based.

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Linux-Based Server Components

Component	Description	Type	Mandatory?
SLD (System Landscape Directory)	Authenticates users and manages an entire SAP Business One landscape. Precondition for all other components.	64-bit	Yes
License Service	Manages license requests.	64-bit	Yes
Extension Manager	Manages deployment of lightweight add-ons and apps powered by SAP HANA.	64-bit	No
Job Service	Manages alert settings and SBO Mailer settings on the server side. The SBO Mailer allows you to send documents directly from the client application through email.	64-bit	No
Mobile Service	Enables you to use mobile apps (for example, SAP Business One Sales) based on the Service Layer.	64-bit	No
App Framework	Enables you to build server applications that run on SAP HANA without the need for additional application servers.	64-bit	Yes
SLD Agent	Enables you to perform the central deployment via SLD control center to manage the complete pool of machines in the SAP Business One landscape.	64-bit	No
Backup Service	Enables you to export and import company schemas, as well as backing up and recovering SAP HANA database instances.	64-bit	No
SAP Business One Server	• System database `SBOCOMMON` that holds system data, version information, and upgrade information. Unlike company schemas, `SBOCOMMON` does not store any business or transactional data. • Shared folder `b1_shf` that contains central configuration data as well as installation files for various client components.	64-bit	Yes
	• Online help files in all supported languages. • Demo databases for various localizations. • Microsoft Outlook integration server, which includes Microsoft Office templates required for the Microsoft Outlook integration add-on and the standalone version.	64-bit	No
Analytics Platform	Includes various analytics features powered by SAP HANA (for example, enterprise search).	64-bit	Yes

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Component	Description	Type	Mandatory?
Service Layer	An application server that provides Web access to SAP Business One services and objects.	64-bit	No
Web Client	Offers the SAP Business One core business logic and processes provided in the new SAP Fiori user experience.	64-bit	No
Electronic Document Service	Processes and monitors the communication of electronic transactions in a customizable platform.	64-bit	No
API Gateway Service	Serves as the gateway to authenticate SBO users and forward requests for backend services, such as the Reporting Service.	64-bit	No

Windows-Based Services and Server Components

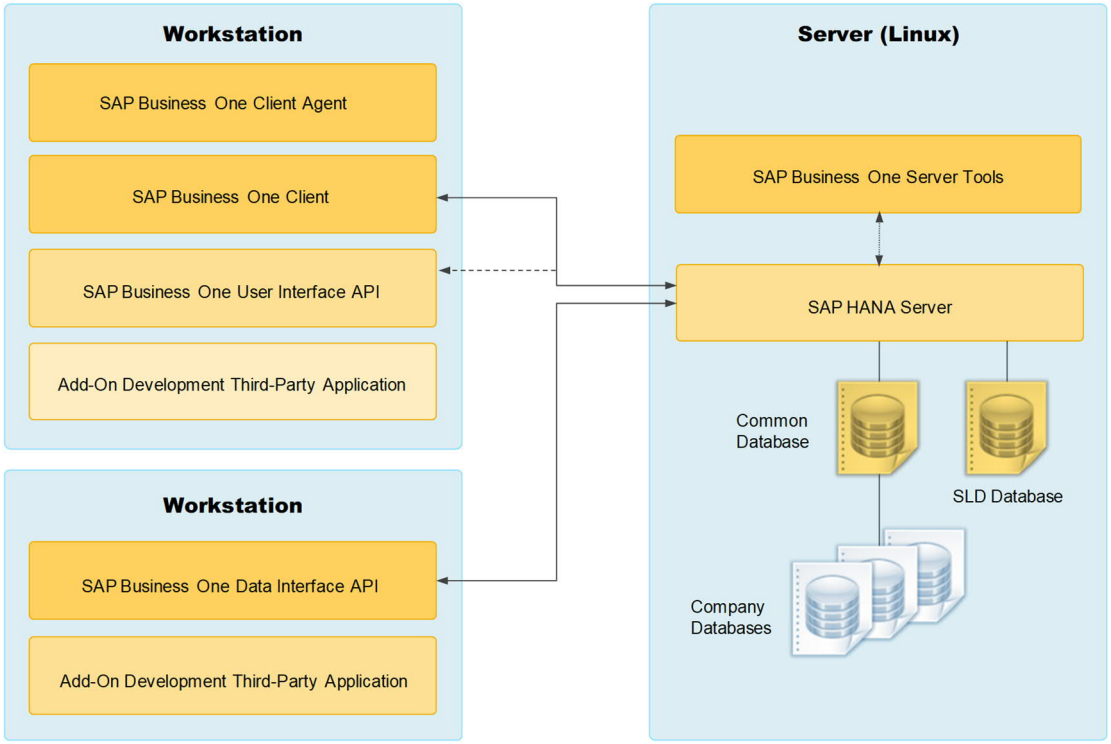
Component	Description	Type	Mandatory?
Browser Access Service	Enables you to access the SAP Business One client application in a Web browser.	64-bit	No
Workflow Service	Enables you to implement user-defined business processes.	32-bit	No
Data Interface Server (DI Server)	Supports high-volume data integration and enables multiple clients to access and manipulate SAP Business One company schemas.	32-bit	No
Integration Framework	A set of business scenarios that enable integration of the SAP Business One application with third-party software and mobile devices. The integration packages include: • Mobile Solution • DATEV HR (Germany only) • Electronic Invoices (Mexico only) • Support for Document Approval (Portugal only) • Support for Nota Fiscal • Support for SAP Customer Checkout	32-bit	No
Remote Support Platform (RSP)	Proactively monitors the health of an SAP Business One installation and provides automated healing, backup support, and download of software patches.	32-bit	Yes
Add-Ons	Add-ons are additional components or extensions for SAP Business One, version for SAP HANA. SAP Business One, version for SAP HANA provides the 64-bit add-ons as follows:	64-bit	No

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Component	Description	Type	Mandatory?
	• Electronic File Manager Format Definition • Microsoft Outlook Integration • Payment Engine		
Outlook Integration Server	Includes Microsoft Office templates required for the Microsoft Outlook integration add-on.	64-bit	No
Outlook Integration Standalone	Standalone installer that allows you to install the Microsoft Outlook integration add-on without installing the SAP Business One client on your PC.	64-bit	No

1.2.2 Client Components

The following figure illustrates the client architecture of SAP Business One, version for SAP HANA:



SAP Business One Client Architecture, version for SAP HANA

Component	Description	Type	Mandatory?
SAP Business One Client	The application executable. You can also install the client application on a terminal server or in a Citrix environment.	64-bit	Yes

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Component	Description	Type	Mandatory?
SAP Business One Client Agent	• Performs actions that require administrator rights on the local system (for example, upgrading the SAP Business One client and add-ons). • Moves SAP Business One log files to the central log folder in the shared folder. Note The client agent is part of the client installation process and is installed by default.	32-bit	Yes
DI API	Data interface API, a COM-based API and an applicative DLL file (`OBSever.dll`) that enables add-ons to access and use SAP Business One business objects.	64-bit	Yes
UI API	User interface API, a COM-based API that is connected to the running application and which enables add-ons to perform runtime manipulation and enhancement of the SAP Business One GUI and its flow.	64-bit	Yes
Excel Report and Interactive Analysis	Enables you to create or view reports in Microsoft Excel based on deployed semantic layers.	64-bit	No
Software Development Kit	Documentation and samples for the SAP Business One SDK.	32-bit	No
DTW	Data transfer workbench which enables importing and updating data in large volumes.	64-bit	No
SAP Business One Studio Suite	An integrated development environment based on the Microsoft .NET Framework, which supports you in developing extensions on top of SAP Business One.	64-bit	No

1.3 Downloading Software

Download the SAP Business One product setup package from the SAP Support Portal, as follows:

1. Go to the Software Download Center on the SAP Support Portal at https://support.sap.com/en/my-support/software-downloads.html.
2. In the Types of Software area, go to either Installations & Upgrades or Support Packages & Patches to download a product setup package.

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> **Note**
>
> As of 10.0 FP 2102, the installation package and upgrade package are unified to a single product setup package.

3. Navigate to and select the relevant download objects.

> **Note**
>
> The package may be divided into several download objects. In this case, select and download all objects under the same patch level designation.

4. Add the selected objects to the download basket.

   We recommend that you read the Info file for the selected download objects.

5. Download the selected objects from your download basket.
6. Extract files from the downloaded objects (archives) to your computer.

> **Note**
>
> If you've downloaded the archives to a Linux machine and want to extract the files directly there, use either of the following commands:
>
> - If it is a single-part archive: `unrar e <FileName>.rar`
> - If it is a multi-part (spanned) archive: `unrar e <FileName>.part01.rar`
>
>   This extracts files from all parts of the archive.

If you experience problems when downloading software, send a message to SAP as follows:

1. Go to the Support Launchpad for SAP Business One on apps.support.sap.com/B1support/index.html.
2. In the left Customer/partner result list, select your company.
3. In the right navigation panel, click Incidents Create.
4. On the Report an Incident page, write the message and assign it to component SBO-CRO-SUP.

1.4 Related Documentation

In addition to the online help and the documentation within the product package (for example, this Administrator's Guide and the License Guide), SAP Business One provides complementary documentation in the form of how-to guides and SAP Notes.

The following tables list the documentation for system implementation, third-party development and integration. You can search for functional how-to guides on SAP Help Portal.

System Implementation

Topic	Documentation Title	Description	Delivery Channel
Hardware Configuration	How to Configure Hardware Platforms for SUSE Linux Enterprise Server	Provides instructions on how to configure various certified hardware models.	SAP Help Portal

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Topic	Documentation Title	Description	Delivery Channel
Installation of SLES Image for SAP Business One	How to Install SUSE Linux Enterprise Server for SAP Business One Products on SAP HANA	Provides instructions on installing the SUSE Linux Enterprise and installing SAP HANA and SAP Business One using the SAP Product Installer.	SAP Help Portal and SAP Note 1944415
Browser Access setup	How to Deploy SAP Business One with Browser Access	Provides instructions such as how to set up the Browser Access service so that users can work with SAP Business One in a Web browser in the office or from outside the office.	SAP Help Portal
SAP HANA Modeling	How to Export and Package SAP HANA Models for SAP Business One	Provides a model packaging tool and a guide.	SAP Note 2008991 and SAP Help Portal
SQL Converter	How to Convert SQL from the Microsoft SQL Server Database to the SAP HANA Database	Includes the SQL converter tool and a guide. The guide describes how to convert structured query language (SQL) in the Microsoft SQL Server database (using T-SQL grammar) to SQL that can be used in the SAP HANA™ database (using ANSI-SQL grammar) using the SQL converter.	SAP Help Portal
Pervasive Analytics	How to Work with Pervasive Analytics	Provides instructions on how to use the following tools: 5. Key Performance Indicators (KPIs) 6. Pervasive dashboard 7. Advanced dashboard	SAP Help Portal
Excel Report and Interactive Analysis	How to Work with Excel Report and Interactive Analysis	Provides information about Excel Report and Interactive Analysis and step-by-step instructions of the designer.	SAP Help Portal and the Excel Report and Interactive Analysis add-in Help menu in Microsoft Excel
Mobile solution	Working with SAP Business One Mobile App for iOS Working with SAP Business One Mobile App for Android	This app allows you to access SAP Business One, SAP's enterprise resource planning application for small business, anywhere and anytime.	SAP Help Portal

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Topic	Documentation Title	Description	Delivery Channel
	Working with SAP Business One Sales Mobile App for iOS Working with SAP Business One Sales Mobile App for Android	With the SAP Business One Sales app you can work with activities, view business content, manage customer data, monitor sales opportunities, and do much more.	SAP Help Portal
	Working with SAP Business One Service Mobile App for IOS Working with SAP Business One Service Mobile App for Android	With the SAP Business One Service mobile app, maintenance technicians who provide on-site services for customers can view and resolve the assigned service tickets easily and efficiently.	SAP Help Portal
Web Client	Web Client for SAP Business One User Guide	This document guides you through the available features and functions in the Web client for SAP Business One. It is based on SAP Fiori design principles, on top of SAP Business One 10, version for SAP HANA.	SAP Help Portal
API Gateway	How to Work with SAP Business One API Gateway	This API Gateway is a service that provides a unified service endpoint for you to access business data through an API call from a source system outside SAP Business One systems. It provides you with a one-time authentication and you can then have access to the Report Service.	SAP Help Portal
High Availability	Setting Up SAP HANA Database High Availability for SAP Business One for Automatic Failover	Includes an automatic setup & failover script, configuration files and a guide. This solution is based on the standard SUSE Linux Enterprise Server for SAP Applications.	SAP Note 1944415 and SAP Help Portal
	SAP Business One Components High Availability Guide	Provides instructions on how to set SAP Business One System Landscape Directory and License Server high availability mode	SAP Help Portal

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Third-Party Development

Topic	Documentation Title	Description	Delivery Channel
Service Layer	Service Layer API Reference	Documents all entities and actions exposed through the Service Layer API.	`https://<Load Balancer Address>:<Load Balancer Port>/index.html`
	Working with SAP Business One Service Layer	Describes the basic usages of SAP Business One Service Layer and explains the technical details of building a stable and scalable Web service using SAP Business One Service Layer.	`https://<Load Balancer Address>:<Load Balancer Port>/index.html`, SAP Help Portal
App Framework	Working with App Framework for SAP Business One	Describes how to set up your SAP Business One App development environment and how to develop, package and deploy your apps.	SAP Help Portal
Semantic Layers	How to Work with Semantic Layers	Includes a reference guide and a how-to guide for working with semantic layers.	SAP Help Portal
Workflow	How to Configure the Workflow Service and Design the Workflow Process Templates	The package “How to Configure the Workflow Service” includes the following: • A how-to guide for working with the workflow function • An API reference document • Some workflow samples	SAP Help Portal

Integration Framework

Topic	Documentation Title	Delivery Channel
Mobile Solution	• User Guide: SAP Business One mobile app for iOS • User Guide: SAP Business One mobile app for Android	SAP Help Portal and within the mobile app

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Topic	Documentation Title	Delivery Channel
DATEV HR	Leitfaden zur Personalabrechnung mit DATEV HR (German only)	SAP Help Portal
Electronic Invoices	MX - Electronic Documents (CFDI Model)	SAP Note 2271455
Support for Document Approval	PT - Electronic communication of transport documents and invoices to tax authority	SAP Notes 1757955 and 2416279
Support for SAP Customer Checkout	Integration with SAP Customer Checkout	To display the guide in the integration framework, choose Scenarios → Control and for `sap.CustomerCheckout`, choose Docu.

Important SAP Notes

SAP Note	Title	Remarks
2826199	Central Note for SAP Business One 10.0, version for SAP HANA	References Overview Notes of all 10.0 patch levels and some other important SAP Notes.
2830177	Release Update Note for SAP Business One 10.0, version for SAP HANA	Describes limitations that exist in release 10.0.
2830195	Collective Note for SAP Business One 10.0, version for SAP HANA Upgrade Issues	References SAP Notes that describe issues that you may encounter during the upgrade to release 10.0.
2830211	Collective Note for SAP Business One 10.0, version for SAP HANA General Issues	References SAP Notes that describe general issues of release 10.0 that are neither limitations nor about upgrade.
2027458	Collective Consulting Note for HANA-related Topics of SAP Business One, version for SAP HANA	References important SAP Notes for SAP HANA-related topics, for example, a troubleshooting guide and a schema import/export guide.
1602674	SAP Business One mobile app for iOS - Troubleshooting and compatibility information	Provides troubleshooting guidance for setting up or using the SAP Business One mobile app for iOS.
1924930	SAP Business One mobile app for Android - Troubleshooting and compatibility information	Provides troubleshooting guidance for setting up or using the SAP Business One mobile app for Android.

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Related Websites

Website Name	Website Address	Access Permission
SAP Help Portal	• Generic address: https://help.sap.com/viewer/index You can search across all SAP products on this web page. • Address for SAP Business One product line: https://help.sap.com/viewer/p/SAP_BUSINESS_ONE_PRODUCT_LINE You can find all products that belong to the SAP Business One product line on this web page. **Note** Through selecting the product page, you can get an overview of all available documentations for a specific product. You may then filter by version and language.	Access to SAP Help Portal is free. You can log on to SAP Help Portal with your S-user account to access documents that are not available to the public. If you do not have an S-user account, contact your SAP Business One partner. Partners can request S-user accounts for their customers via Support Launchpad for SAP Business One.
SAP Partner Edge	• Generic address: https://partneredge.sap.com • Address for SAP Business One product line: https://partneredge.sap.com/en/products/business-one/about.html	Only an SAP partner can access the SAP Business One area on the SAP Partner Edge web page. SAP partners need to register on the home page when logging in for the first time; and need to select SAP Business One in their profile to ensure they can get the latest information about SAP Business One on their home page.
Support Launchpad for SAP Business One	https://apps.support.sap.com/B1support Easy access to SAP Business One support applications, such as incident creation, SAP Note search, user and system management or license key requests.	To gain access to the Support Launchpad for SAP Business One, you must be an SAP Business One customer or partner, and you need an S-user account. If you do not have an S-user account, contact your SAP Business One partner.

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2 Prerequisites

Before installing SAP Business One, version for SAP HANA, ensure that you have fulfilled certain prerequisites.

For compatibility information regarding SAP Business One, version for SAP HANA and SAP Business One Cloud, see SAP Note 1756002.

2.1 Host Machine Prerequisites

Recommendations

- For security reasons, we recommend that you set up a strong password for the SYSTEM user right after installing the SAP HANA database server. Alternatively, as a safer option, create another database user account as a substitute for the SYSTEM user. For the required database privileges, see Database Privileges for Installing, Upgrading, and Using SAP Business One.
- Do not run third-party Tomcat Web applications on the host machine.
- Assign a static IP address to the host machine where the SAP HANA database server and the SLD service will be installed.

Hardware Platform

- Ensure that your hardware platform is certified by SAP Business One. To configure your hardware platform, follow the instructions in the guide attached to SAP Note 1944415.

  For more information, see the Platform Support Matrix for SAP Business One, version for SAP HANA on SAP Help Portal.
- Ensure that you have assigned the appropriate hostname and IP address to the Linux server before installing SAP HANA and SAP Business One, version for SAP HANA. After the installation, do not change the hostname and IP address unless necessary.

  If you are forced to change the hostname or IP address (for example, due to company policy) of the SAP HANA server, follow the instructions in SAP Note 1780950 to reconfigure SAP HANA.
- If you have been using SAP Business One (SQL) in conjunction with SAP Business One analytics powered by SAP HANA, and plan to migrate your company databases to SAP HANA, you cannot simply reuse your existing SAP HANA server. Instead, you must first use the sizing tool for SAP Business One, version for SAP HANA to resize your company databases and determine the hardware requirements. According to the sizing results, you may need to upgrade your SAP HANA server.

  You can find the sizing tool for SAP Business One, version for SAP HANA on SAP Help Portal.

Software and Libraries

Ensure that the following components and libraries are installed on the Linux server:

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Installation	Notes
Operating System: SUSE Linux Enterprise Server (SLES): • 15 (x86_64) • 15 SP1(x86_64) • 15 SP2(x86_64)	Note that the SLES image for SAP Business One is to be used only for installation and not for upgrade. You can upgrade your operating system by way of online updates, or you can contact your hardware vendor or SUSE for support. For information about recommended OS settings, refer to SAP Notes 2684254 (SAP HANA DB: Recommended OS settings for SLES 15 / SLES for SAP Applications 15) and 2578899 (SUSE Linux Enterprise Server 15: Installation Note). **Note** SUSE Linux Enterprise for SAP Business One is ready for SLES 15 SP2. For more information about downloading the image, see https://www.suse.com/slesb1hana. **Note** SUSE Linux Enterprise Server 15 SP1 uses Python version 3. This module contains the Python 2 runtime and modules. Access to the Python 2 Module is included in your SUSE Linux Enterprise subscription. For more information, see Modules and Extensions Quick Start. **Note** If you use the standard SLES15 SP2, upgrade the Linux Kernel to version 5.3.18-24.24.1 or newer. For more information, see SAP Note 2684254. You need to upgrade GCC to 9.x. For more information, see SAP Note 2886607. **Note** If you intend to upgrade the lower version of SAP Business One server components installed on SLES11 or SLES12 to SAP Business One 10.0, version for SAP HANA, you must first upgrade the operating system to SLES11 SP4 or SLES12 SP4, and then to SLES15 or SLES15 SP1, next upgrade SAP HANA to the required version, and then upgrade SAP Business One server components to SAP Business One 10.0, version for SAP HANA. For more information about upgrades of SUSE Linux Enterprise Server, see Upgrade Guide for SUSE Linux Enterprise Server 15. **Note** To access the shared folder `b1_shf` on your Linux server, you must start the Samba component. If you use the XFS file system, be sure to read SAP Note 2314126 and ensure the proper Kernel version.

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Installation	Notes
	Note Btrfs, the default file system of SLES12, is not supported by SAP HANA. Currently, only XFS, EXT3, GPFS, NFS, and OCFS2 can be used in the SAP HANA environment. The XFS is recommended as the default file system for all versions of SUSE Linux Enterprise Server. For more information, see SAP Note 405827.
SAP HANA Enterprise Edition 2.0 SPS 05 Revision 050； SAP HANA Client Version 2.7.26	When installing a newly certified HANA appliance with a recommended HANA revision, you can refer to Certified and Supported SAP HANA Hardware Directory, and do the following: 1. Navigate to the Certified and Supported SAP HANA Hardware Directory page. 2. Click View Listings and enter the Find Certified Appliances page. 3. On the left side of the page, click Certification Scenarios and expand the list. 4. Select the SAP Business One relevant scenarios (for example, HANA-HWC-B1 SU 2.1). **Recommendation** Starting with SAP HANA 2.0, computing nodes with at least Intel Haswell CPU or later are strongly recommended. For more information, see SAP Note 2399995 and 2422013. **Caution** For a single, productive SAP HANA appliance, multiple SAP HANA database instances (SIDs) are not supported. For more information, see SAP Note 1681092. When performing a fresh installation of the SAP HANA database, SAP HANA multitenant database containers (MDC) is the only and default database mode. For more information about SAP HANA tenant databases, see Creating and Configuring Tenant Databases and SAP Note 2096000. For more information about installing SAP HANA, see the SAP HANA installation guides on SAP Help Portal at https://help.sap.com/hana_platform.
Application function libraries (AFLs)	The AFLs must be the same version as the SAP HANA server. **Note** You can install the AFLs only after installing the SAP HANA server. However, if you need to upgrade the SAP HANA server later, you must upgrade the AFLs first. For more information, see Database Role PAL_ROLE for Pervasive Analytics.

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Installation	Notes
64-bit version of SAP HANA database client for Linux	For more information, see SAP HANA Client Installation Guide at http://help.sap.com/hana_platform.
Third-party libraries	Various third-party libraries are required for the installation and execution of SAP Business One server components. During the installation, if any of the libraries do not meet the minimum version requirement, the setup wizard will prevent you from proceeding. For a list of the prerequisite libraries and their required versions, see Appendix 1: List of Prerequisite Libraries for Server Component Installation.

Ports

Ensure that you have kept the following ports available:

- For SAP HANA services: `3xx15` (default value for the first tenant database) and `3xx40` to `3xx99` (for all tenant databases); `3xx13` for the system database (where xx represents the SAP HANA instance number)

  Note

  If you intend to check the port number, log in to the system database and select * from SYS_DATABASES."M_SERVICES"

- To use the app framework: `43xx` for SSL-encrypted communication or `80xx` (where xx represents the SAP HANA instance number)

  Example

  If you intend to install the server tools on SAP HANA instance `00`, you should ensure port `4300` or `8000` is not being used by other applications.

- `40000`, `40001`: `40000` is the default port number for all the SAP Business One services (except for the app framework) on Linux. If you want to use the default port number, ensure that this port is also available.

  In addition, if you are using port `X`, make sure that you open both port `X` and port `(X+1)`. For example, if you are using port `40000`, you must also open port `40001`.

Script Server

You have started the script server, as follows:

1. To access the SAP HANA administrative settings, in the SAP HANA studio, right-click the relevant SAP HANA SYSTEMDB, for example, SYSTEMDB@MDC(SYSTEM) and navigate to Open SQL Console.
2. In the SQL console, execute the following SQL statement as an administrative user (for example, SYSTEM):

   ```
   ALTER DATABASE <container name> ADD 'scriptserver'
   ```


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2.2 Client Workstation Prerequisites

- For information on hardware and software requirements on client workstations, search for the following documents on SAP Help Portal:
  - SAP Business One, version for SAP HANA Platform Support Matrix
  - SAP Business One Hardware Requirements Guide
- If you already have SAP Crystal Reports installed on your computer, first uninstall the software and then follow the installation procedures described in the section Installing SAP Crystal Reports, version for the SAP Business One Application.
- You have installed Microsoft SQL Server drivers on all workstations.

  Note

  Workstations that have Microsoft SQL Server installed have already had the SQL Server drivers installed automatically. However, you should manually install the SQL Server drivers on workstations that do not have Microsoft SQL Server installed.
- You have installed Microsoft .NET Framework 4.5.2. or the higher version in CLR 4.

  Note

  If you do not have Microsoft .NET Framework 4.5.2 installed, it is installed during the SAP Business One installation process. However, 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.
- To install and use Excel Report and Interactive Analysis, ensure that you have installed the following:
  - Microsoft Excel 2010, 2013, 2016 or Office 365
  - Microsoft .Net Framework 4.5.2 or the higher version in CLR 4

    If it is not installed yet, you can install it during the installation process. However, a restart may be required.
  - Microsoft Visual Studio 2010 Tools for Office Runtime

    If it is not installed yet, you can also install it during the installation process.
  - 64-bit Microsoft Excel
- To display Crystal dashboards in the SAP Business One client application, ensure you have installed Adobe Flash Player for the embedded browser Google Chrome on each of your workstations. You can download Adobe Flash Player at http://www.adobe.com.

  Note

  The download link provided by Adobe is by default for Microsoft Internet Explorer. To download Adobe Flash Player for other browsers, choose to download for a different computer, and then select the correct operating system and a Flash Player version for other browsers.
- You have installed the 64-bit SAP HANA database client for Windows. For more information, see SAP HANA Client Installation Guide at http://help.sap.com/hana_platform.

  Note

  If you also have a 32-bit application on the client workstation (for example, DI API Legacy Package), you must install a 32-bit SAP HANA database client as well.

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- If you want to access the System Landscape Directory service, be sure to use one of the following Web browsers:
  - Microsoft Internet Explorer 9 or later
  - Mozilla Firefox 9 or later
  - Google Chrome 12 or later
- If you want to access SAP Business One in a Web browser, be sure to use one of the following Web browsers:
  - Mozilla Firefox
  - Google Chrome
  - Microsoft Edge
  - Apple Safari (Mac and IPad)
- If you want to access Web Client for SAP Business One, be sure to use one of the following Web browsers:
  - Mozilla Firefox
  - Google Chrome
  - Apple Safari (Mac and IPad)

2.3 Latency and Bandwidth Requirements

All SAP Business One components must be installed in the same LAN (local area network). Putting the client and the server into two different locations (for example, VPN) will have an impact on the performance of SAP Business One. Thus, latency should be as low as possible (< 1 ms).

The same LAN means:

- Sufficient bandwidth > 100 M
- Small latency < 1 ms
- Same WINS server
- Same local DNS server, if configured
- Same AD server, if AD is being used

For users outside the LAN of the server (for example, those using VPN connection), we recommend that you use a remote desktop or the SAP Business One Browser Access service to access the SAP Business One client instead of installing the SAP Business One client directly.

For SAP HANA system replication scenarios, please refer to the SAP HANA Network Requirements document for details on the network requirements (among other things, bandwidth and latency).

2.4 Constraints

You can run SAP Business One, version for SAP HANA for 31 days without a license. To continue working with the application after 31 days, you must install a valid license key assigned by SAP. For more information, see the License Guide for SAP Business One 10.0, version for SAP HANA, which is available in the product package (`\Documentation\SystemSetup\LicenseGuide.pdf`).

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> **Note**
>
> For more information about installing the license key, see SAP Business One License Guide on SAP Help Portal.

There are certain constraints on the analytics features:

- You cannot use analytics features in a trial company. In other words, you must have a valid license to use analytics features powered by SAP HANA.
- The `Support` user cannot use analytics features.

  For more information about the `Support` user, see User Types.

The demo databases (schemas) provided are not for productive use. The application supports 40 localizations in its demo databases.

2.5 User Privileges

The following table summarizes the requirements and recommendations for the group setup of the supported operating system:

Operation	Operating System	User Group
Server installation	SUSE® Linux Enterprise Server	Root
Installation of DI Server and Workflow	Microsoft® Windows operating systems	Administrator
Client installation		Administrator
Client upgrade		Administrator
Runtime		Users

> **Note**
>
> For more information about possible installer issues related to the user account control (UAC) in Microsoft Windows operating systems, see SAP Note 1492196.

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3 Installing SAP Business One, Version for SAP HANA

The overall installation procedure of SAP Business One, version for SAP HANA is as follows:

1. On a Linux server, install Linux-based server components.
2. On a Windows server, install Windows-based server components.
3. On each workstation, install client components.

For demonstration or testing purposes, you can install all Windows-based components on the same Windows computer. You can also install the SAP Business One client on a terminal server or in a Citrix environment.

> **Note**
>
> For security reasons, all SAP Business One components (server components and client components) must be installed with the internal network address. If you want to access SAP Business One directly via Internet with a public network address, we can only expose the related services.
>
> To handle external requests, we recommend that you deploy a reverse proxy rather than using NAT/PAT (Network Address Translation/Port Address Translation). For more information, see Enabling External Access to SAP Business One Services or How to Deploy SAP Business One with Browser Access on SAP Help Portal. Alternatively, you can use Microsoft Remote Desktop Service for external access.

To ensure high availability (recovery from disasters for business continuity) of your system, you can adopt either of the high-availability solutions provided by SAP Business One. For more information, search for "high availability" in the SAP Business One area on SAP Help Portal.

> **Recommendation**
>
> For security reasons, we recommend that you install different landscapes for different environments (for example, testing environment).

> **Recommendation**
>
> If your server is domain-joined, we recommend that you specify the FQDN as the network address of the database server, hostname or SLD address.
>
> FQDN stands for fully qualified domain name. The FQDN represents the absolute address of the internet presence. "Fully qualified" refers to the unique identification that guarantees that all of the domain levels are specified. The FQDN contains the host name and domain, including the top-level domain, and can be uniquely assigned to an IP address. For example, `server.domain.com`.

3.1 Installing Linux-Based Server Components

You must install the following components on a Linux server:

- SAP Business One server tools, version for SAP HANA, including the following:
  - Landscape management components:

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    - System Landscape Directory (SLD)
    - License manager
    - Extension manager
  - Job service
  - Mobile service
  - App framework
- SLD Agent
- Backup service
- SAP Business One server:
  - Shared folder (`b1_shf`):
  - Common database (`SBOCOMMON`):
  - Demo databases: Demonstration databases (schemas) that include transactional data for your testing

    > **Note**
    >
    > As of release 10.0 PF 2102, if you want to install demo databases (schemas) for SAP Business One, version for SAP HANA, you need to download the demo database zip files from the SAP Help Portal at https://help.sap.com/doc/1660bf9ea40a46e1916736665d024dc6/10.0/en-US/B1_Demo_Databases_Overview.pdf , and then import them manually.
    >
    > You can also navigate to the demo database downloading page from the Component Selections window in the setup wizard during the server components installation or upgrading process.
    >
    > For more information about deploying demo databases, see Deploying Demo Databases.
  - Online help files in all supported languages
  - Add-ons

    By installing the SAP add-ons as part of the server installation process, you register them to all companies on the server. If you do not install them now, you will have to register the add-ons manually later in the SAP Business One client.
  - Microsoft Outlook integration server
- Analytics platform
- Service Layer
- Web Client
- Electronic Document Service
- API Gateway Service

You can install the Linux-based server components in one of the following modes:

- GUI mode
- Silent mode

Prerequisites

- You have installed the 64-bit version of the SAP HANA database client.
- You have the password of the Linux `root` user account.

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- We recommend that you use a database user other than SYSTEM. To ensure that this database user has appropriate database privileges, follow the instructions in Database Privileges for Installing, Upgrading and Using SAP Business One.
- You have extracted or copied the following folders from the product package to the Linux server:
  - Packages.Linux
  - Prerequisites
  - Packages.64/Server
  - Packages.64/Client
  - Packages.64/DI API Legacy Package
  - Packages.64/ComponentsWizard
  - Packages.x64/DI API
  - Packages.64/SAP CRAddin Installation
  - Packages.64/Crystal Server Integration
- If you have enough disk space, you can extract or copy the entire package to the Linux server. For successful backup of the server instance and export of company schemas, ensure the following:
  - The backup location has free space that is at least three times the SAP HANA data size.

    Note that you must regularly copy the server backups/schema exports to a storage location or medium somewhere other than the SAP HANA server. This not only ensures the data safety but also ensures the backup location has enough space for backup operations.
  - The file system of the backup location was created with the intention of holding many small files and has a reasonable number of index nodes (inodes) available. This is especially important if you intend to schedule company schema export at short intervals.

    Recommendation

    Use the "-T small" option when creating the file system. For example:

    ```
    mke2fs -t ext3 -T small /dev/sda2
    ```
  - The SAP system (`sapsys`) group ID must remain the default value 79 for the local SAP HANA server (if one exists) and for all SAP HANA servers that require to be backed up using the backup service. Make sure that all SAP HANA servers in the same landscape share the same SAP system group ID value. For more information about the `groupid` parameter, see the SAP HANA Administration Guide at http://help.sap.com/hana_platform.

Dependencies Between Server Components

Note

You can install all Linux-based SAP Business One server components together. However, during the installation process, if the System Landscape Directory fails to install, you cannot continue the installation for the other components. The System Landscape Directory is a precondition for all other server and client components. Likewise, if you want to install all components separately, you must install the System Landscape Directory first.

Certain server components are dependent on other server components. When performing installation, you must pay attention to the following dependencies, especially when performing the silent installation:

- The System Landscape Directory (SLD) is mandatory for all other components.

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- The SAP Business One server depends on the existence of both the SLD and the license service.
- The app framework depends on the system schema `SBOCOMMON` and valid `SBOCOMMOM` registration in SLD is required. Moreover, the pervasive analytics functions and the Fiori-style cockpit depend on the existence of the app framework.
- The analytics platform depends on the system schema `SBOCOMMON` and valid `SBOCOMMON` registration in SLD is required.
- The mobile service depends on the Service Layer and the existence of system schema `SBOCOMMON;` valid `SBOCOMMON` registration in SLD is required.

  > **Note**
  >
  > The app framework and the backup service can be installed separately from the SAP HANA database.
- The backup service requires the `SBOCOMMON` schema to exist in all the SAP HANA databases, local and remote.
- The Service Layer depends on the existence of system schema `SBOCOMMON` and valid `SBOCOMMON` registration in SLD is required.
- The job service depends on the existence of Service Layer if you want to use the alert function. Make sure that Service Layer exists in the same landscape and is bound with the database server where alert service works.
- Web Client depends on the existence of the Service Layer and the analytics platform.
- Electronic Document Service depends on the existence of the Service Layer; valid Service Layer registration in SLD is required.

3.1.1 Command-Line Arguments

The following table lists all the command-line arguments supported by the server components setup wizard:

Argument	Description
`-i`	Installs new components and upgrades existing components.
`-r`	Reconfigures the settings, for example, uses a new IP address.
`-u`	Uninstalls the application.
`-va` / **`--validate`**	Validates that components are working properly.
`-t <File Path>`	Creates a template property file which contains all parameters but no values. **Note** The directory must already exist; otherwise, the template file cannot be generated. Although you can reuse a template for future patches, properties and options may vary between patches.
`-d <Temporary Folder>`	Specifies a temporary folder for the installation (or upgrade, reconfiguration, validation) instead of the default temporary folder (for example, `/tmp`).
`silent -f <Property File Path>`	Loads input parameters from a specified property file.

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Argument	Description
`--debug`	Sets installation in debug mode and creates log files with a higher verbosity level. Different log files are generated depending on the installation status: • Installation finished successfully: `/<Installation Folder>/logs/B1Installer_<TimeStamp>.log`. For example, `/usr/sap/SAPBusinessOne/logs/B1Installer_201402191100.log`). • Installation did not finish correctly: `<Temporary Folder>/B1Installer.log`. For example: `/tmp/B1Installer.log`. As in GUI mode, sensitive information is not displayed on the console and is hashed in the log file.
`--mem-tomcat`	Sets a minimum memory requirement for installation or upgrade. By default a 5120-MB (5 GB) memory is required; if you intend to install only a few components that do not require lots of memory (for example, the SLD and license service), you may set a lower memory requirement. If the system memory does not meet the requirement, installation or upgrade cannot proceed. If the free memory is lower than the requirement, the setup program displays a warning but you may choose to continue with the process. For example: **`./install --mem-tomcat 2048M`** A minimum of 2048 MB (2 GB) is still required for installation or upgrade.
`-h`	Displays help information.
`-v`	Displays the version of the installer.

For the return codes used in the server components setup wizard, see Appendix 4: List of Return Codes Used in the Server Components Setup Wizard

3.1.2 Wizard Installation

The wizard installation requires a graphical environment. You can also install the Linux server components in the interactive GUI mode remotely from a Windows computer with the aid of an X Server application.

> **Note**
>
> Installation of the Service Layer is described in a separate chapter: Installing the Service Layer.

Procedure

The following procedure describes how to install all of the server components on a Linux server together (except for the Service Layer). If you want to install the server components separately, refer to the “Dependencies Between Server Components” section above to ensure successful installation. For more information about command-line arguments that can also be used with the wizard installation, see Silent Installation.

1. Log on to the Linux server as `root`.
2. In a command line terminal, navigate to the directory …`/Packages.Linux/ServerComponents` where the `install` script is located.

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3. Start the setup program from the command line by entering the following command:

   ```
   ./install
   ```

   > **Note**
   >
   > If you receive an error message: “Permission denied”, you must set execution permission on the installer script to make it executable. To do so, run the following command:
   >
   > ```
   > chmod +x install
   > ```

   The setup process begins.

4. In the welcome window of the setup wizard, choose Next.
5. In the Specify Installation Folder window, specify a folder in which you want to install the server components and choose Next.
6. In the Select Features window, select the features that you want to install, and choose Next.

   You must install the System Landscape Directory and the license manager for landscape management.

   > **Note**
   >
   > If you want to use the analytical KPI function, you must install the app framework as well as the analytical features. In addition, if you install the app framework, you must restart the SAP HANA instance after the installation. The wizard will remind you to do so at the end of the installation process.

   If a selected feature depends on system components which are missing (for example, programming libraries), the installer prevents you from proceeding and displays the missing components. Similarly, an SAP Business One server component may depend on another component (for example, the analytical features require the system schema `SBOCOMMON` to exist on the same server); if the latter component is missing and not selected for installation, the installer also prevents you from proceeding.

7. In the Network Address window, select an IP address or use the hostname as the network address for the selected components. The hostname is prefilled with the full qualified domain name (FQDN).

   Note that if you install the SAP Business One components on the SAP HANA server machine and intend to connect to a local SAP HANA instance, you must use the same IP address as the SAP HANA instance.

   > **Recommendation**
   >
   > Even if more than one network card is installed, use the same IP address for all components installed on the same computer or use the hostname.
   >
   > If you use different IP addresses for different components, the settings can be kept during the upgrade. Nevertheless, if you need to reconfigure the system later, you can apply only one network address to all local components.

8. In the Service Port window, specify a port number that is to be used by all of the services (except for the app framework, Service Layer, Web Client, Electronic Document Service, Authentication Service and API Gateway Service components) and choose Next. The default port number is `40000`.

   > **Note**
   >
   > The port number must be within the 10000-65535 range.

   > **Caution**
   >
   > If you have installed a firewall on the server on which you install the server tools, make sure that the firewall is not blocking the port number you use for the services.

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In addition, if you are using port `X`, make sure that you open both port `X` and port `(X+1)` in the firewall. For example, if you are using port `40000`, make sure to also open port `40001`.

9. In the Landscape Selection window, specify a type of landscape installation. Choose one of the options:
   - New landscape: Create a new landscape.
   - Existing landscape: Connect to the existing landscape
10. In the Site User Password window, create a password for the site user (`B1SiteUser`) and confirm the password. Then choose Next.

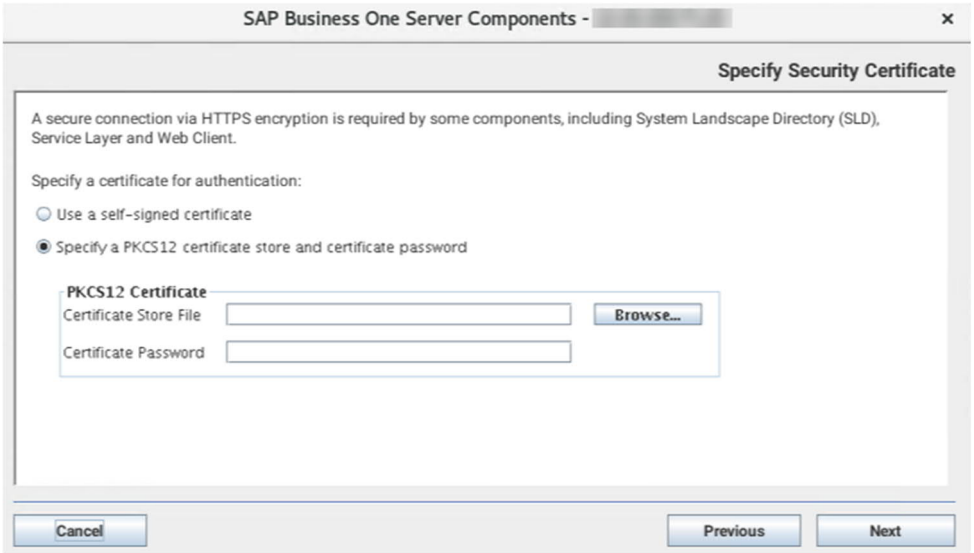
    For details on which special characters are not allowed for a site user password, see SAP Note 2330114.

    Recommendation

    For security reasons, you should set a strong site user password, at least as strong as that defined in your company's password policy, and change it frequently.

    For more information about site users, see Managing Site Users.
11. In the Specify Security Certificate window, specify a security certificate and choose Next.

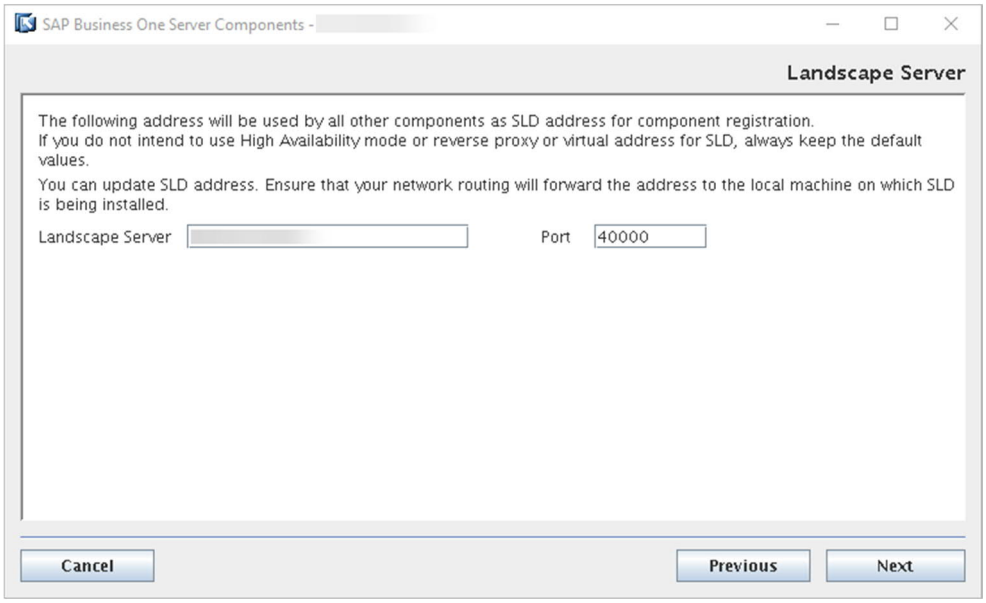
    You can obtain a certificate using the following methods:
    - Third-party certificate authority - You can purchase certificates from a third-party global Certificate Authority that Microsoft Windows trusts by default. If you use this method, select the Specify a PKCS12 certificate store and certificate password radio button and enter the required information.
    - Certificate authority server - You can configure a Certificate Authority (CA) server in the SAP Business One landscape to issue certificates. You must configure all servers in the landscape to trust the CA's root certificate. If you use this method, select the Specify a PKCS12 certificate store and certificate password radio button and enter the required information.
    - [Not recommended] Generate a self-signed certificate - You can let the installer generate a self-signed certificate; however, your browser will display a certificate exception when you access various service Web pages, as the browser does not trust this certificate. To use this method, select the Use Self-Signed Certificate radio button.



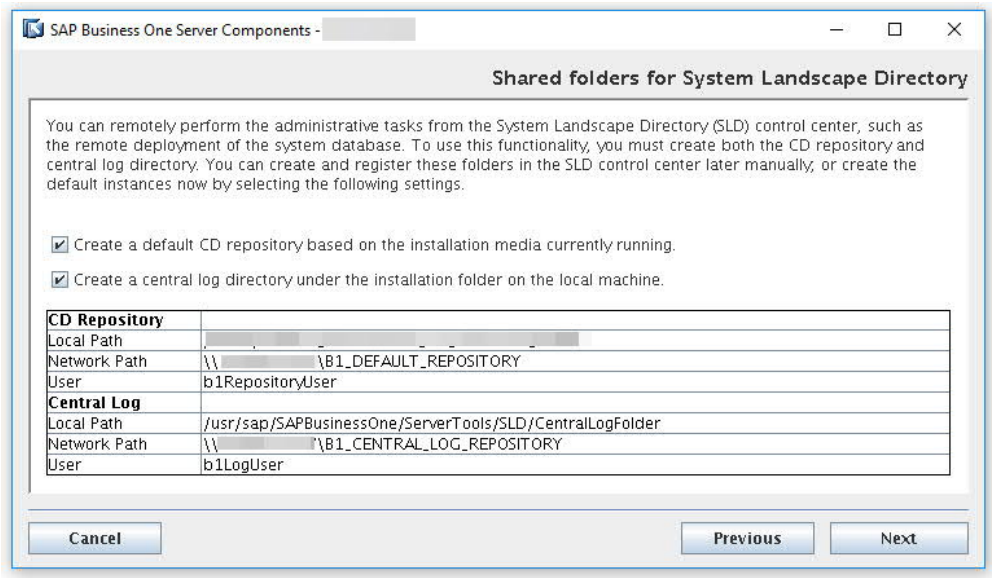
12. In the Landscape Server window, enter the network address and port number that will be used by all other components for component registration. If you do not intend to use high availability mode or reverse proxy or virtual address for SLD, always keep the default values.

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For more information about SLD and License Server high availability installation, see SAP Business One Components High Availability Guide in the documentation area of SAP Help Portal.



13. In the Shared Folders for System Landscape Directory window, you can choose to create a default CD repository and a central log repository.



The System Landscape Directory (SLD) control center is a central workplace. If you intend to access the SLD control center in a Web browser to perform remote administrative tasks, such as the central deployment for the system database, the registration of logical machines without direct access, you should simultaneously create the CD repository and the central log repository. Once you enable the checkboxes, the default values in the table will be displayed.

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Note

- You cannot change the values in the table.
- You can skip this step and create the folders later from the SLD control center. For more information, see Registering SAP Business One Installation CD.

If you will not perform the remote administration via the SLD control center, you do not need to choose any option but click Next to continue the installation process.

14. In the License Server Node Type window, select a node type for the new license server installation.

    To enable high availability for the license server, install different instances either as a primary node or as a secondary node.

    - When you select High Availability Primary Node, you need to enter the virtual address.
    - When you select High Availability Secondary Node, you need to enter the network address and port number of the primary node and the virtual address as well.

    Note

    A virtual IP address (VIP) is an address that is shared among multiple servers, for example, **`https://nginx.domain.com:<port>`**. It is commonly used to enable database high availability on various nodes. If one node fails, the VIP address is automatically reassigned to another node.

    For more information about SLD and License Server high availability installation, see SAP Business One Components High Availability Guide in the documentation area of SAP Help Portal.

15. In the Database Server Connection window, specify the following information and then choose Next:
    - SAP HANA Server: Enter the SAP HANA server address (full hostname or IP address).
    - Instance Number: Enter the instance number for your SAP HANA database.

      Caution

      The instance number must be a double-digit number within the **`00`**-**`97`** range. If you use a one-digit number, it is automatically converted to a double-digit number (for example, **`0`** is converted to **`00`**).
    - Tenant Database: Enter the name of the tenant database which you intend to use.

      Caution

      Make sure the tenant database name starts with an uppercase letter and contains only the following characters:
      - Upper case
      - Alphanumeric
      - Underscore symbols (_)

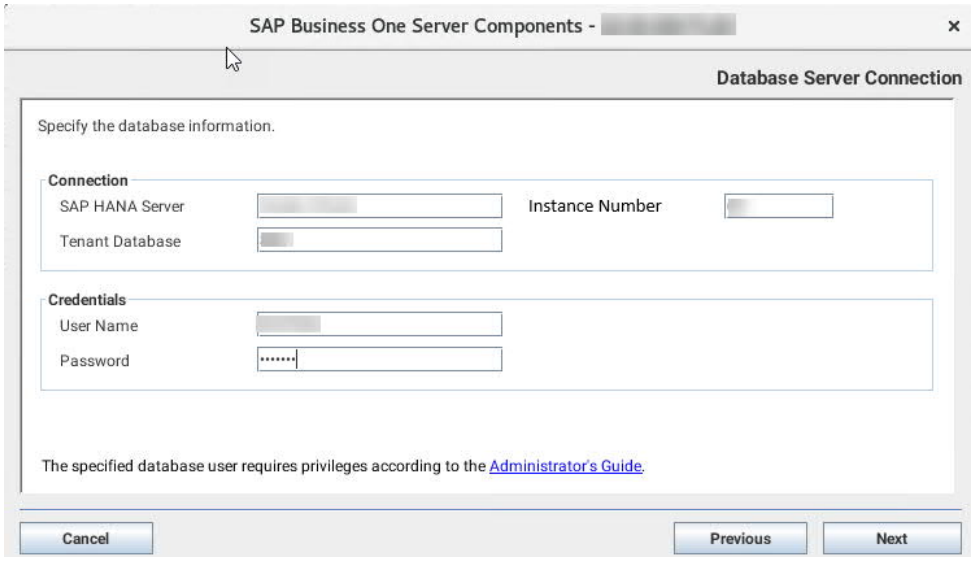
      If you use the lower case, each small letter is automatically converted to upper case.

      Make sure the tenant database name is not SYSTEMDB.
    - User Name and Password: Specify a tenant database user and enter the user password.

      Recommendation

      Do not use the SYSTEM user account. Instead use the database user account that you created as a substitute for the SYSTEM user. For more information, see Database Privileges for Installing, Upgrading, and Using SAP Business One.

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Depending on the password policy of your SAP HANA database, you may need to change the initial password for the database user upon first logon; if you do not, the installer will prevent you from proceeding. For more information about the `force_first_password_change` parameter, see the SAP HANA Administration Guide at http://help.sap.com/hana_platform.

> **Note**
>
> When you install the Web Client, Mobile Service and Electronic Document Service using the SAP Business One Linux Components Wizard, you do not need to enter the database credentials. If only one database instance is registered in the SLD, the components are automatically bound to the database instance; if multiple database instances are registered in the SLD, you need to choose one database instance from the dropdown list.

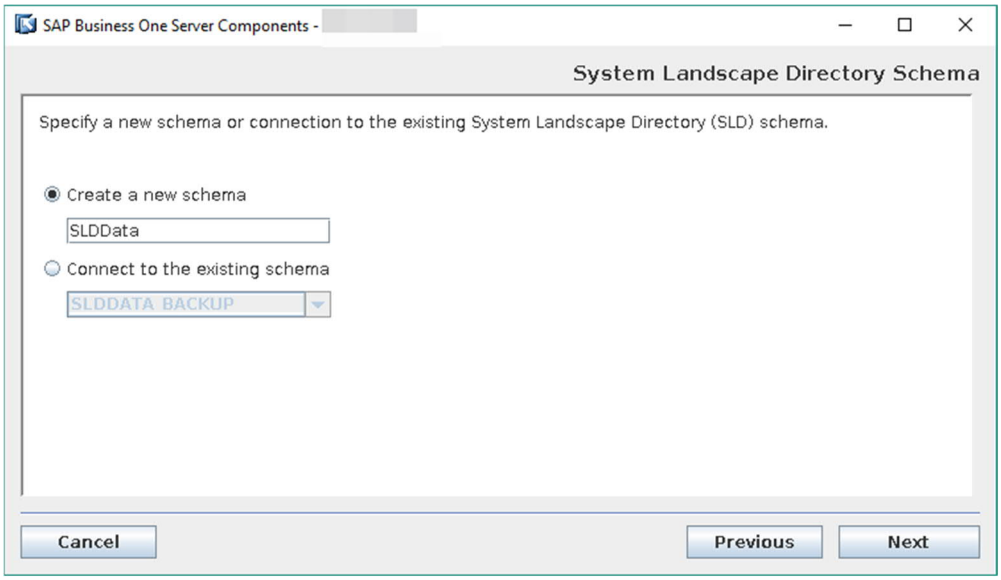
16. In the System Landscape Directory Schema window, specify a new SLD schema or connection to the existing SLD schema.

> **Note**
>
> If you choose to connect to the existing SLD schema, make sure that the existing schema is in the same version as the current wizard. You cannot upgrade the existing SLD schema.

> **Caution**
>
> Make sure the SLD schema name starts with an upper-case letter and contains only the following characters:
>
> - Upper case
> - Digits
> - Underscore symbols (_)
>
> If you use the lower case, each small letter is automatically converted to upper case.

If you select to create a new schema, the default SLD schema name is `SLDData`.

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17. In the Backup Service Settings window, specify the following settings for the backup service:
    - Backup Folder: Specify a folder to store server backups and company schema exports. Each company schema will have a separate subfolder for its exports.
    - Log File Folder: Specify a folder to store backup service log files.
    - Working Folder: Specify a temporary folder where various backup operations are performed (for example, compressing and decompressing files).

      Note

      All three folders must be on the SAP HANA server machine; if the specified paths do not already exist, the setup program will create them during the installation process.

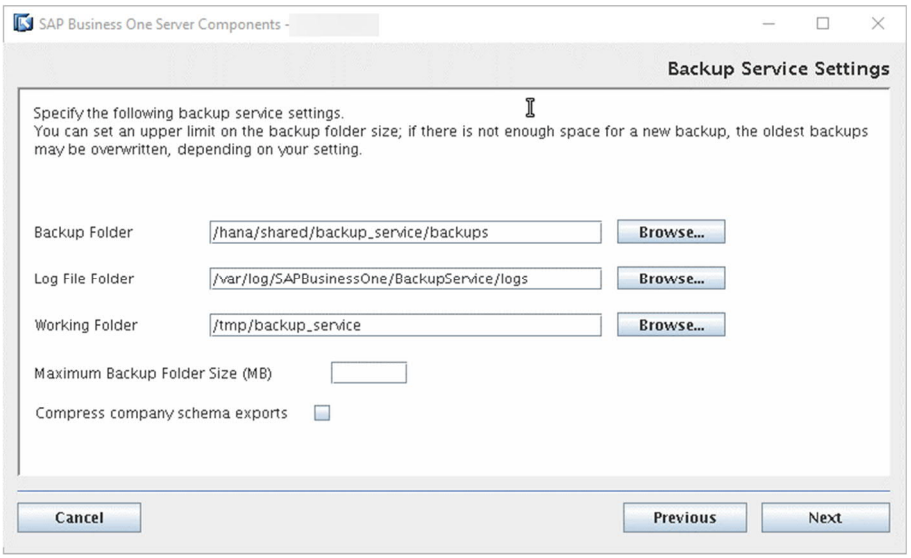
      The log file folder and the backup folder cannot be in the same parent directory; it is likewise for the log file folder and the working folder. For example, you cannot specify **`/backup/logs`** for the log file folder while specifying **`/backup/backups`** for the backup folder.
    - [Recommended] Maximum Backup Folder Size (MB): Set an upper limit on the disk space used for storing the server backups and company schema exports. If a new backup or export would cause the folder size to exceed the limit, older backups or exports are deleted (moved to the trash), following the first-in-first-out principle.

      Note

      If you do not set a limit, you must set up a policy to regularly clean up old backups and exports. This is especially important if you set up regular schedules of exporting your company schemas. For more information, see Creating Export Schedules for Company Schemas.
    - [Recommended] Compress company schema exports checkbox: This is relevant only for company schema export. Select this checkbox to compress each company schema export into a zip file, which has the following benefits:
        - Reduces the size of the schema export.
        - Keeps as many inodes available as possible - instead of tens of thousands of small files, there will be just one zip file for each company schema export.

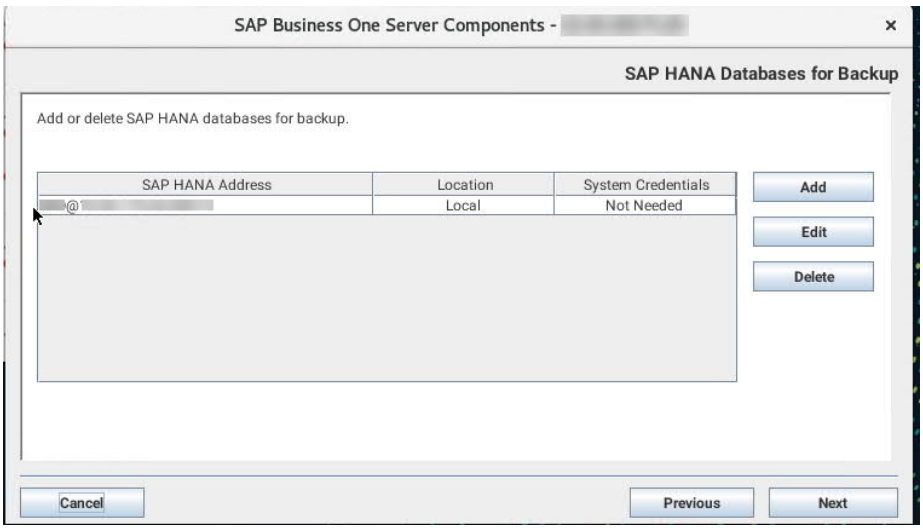
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While this option reduces the eventual schema export size, it requires more disk space for export operations. During the export process, the system requires both space for uncompressed export files and space for compressing the export files; after export operations are complete, the uncompressed export files are deleted permanently and only a compressed package is kept on the disk.



For more information, see Exporting Company Schemas.

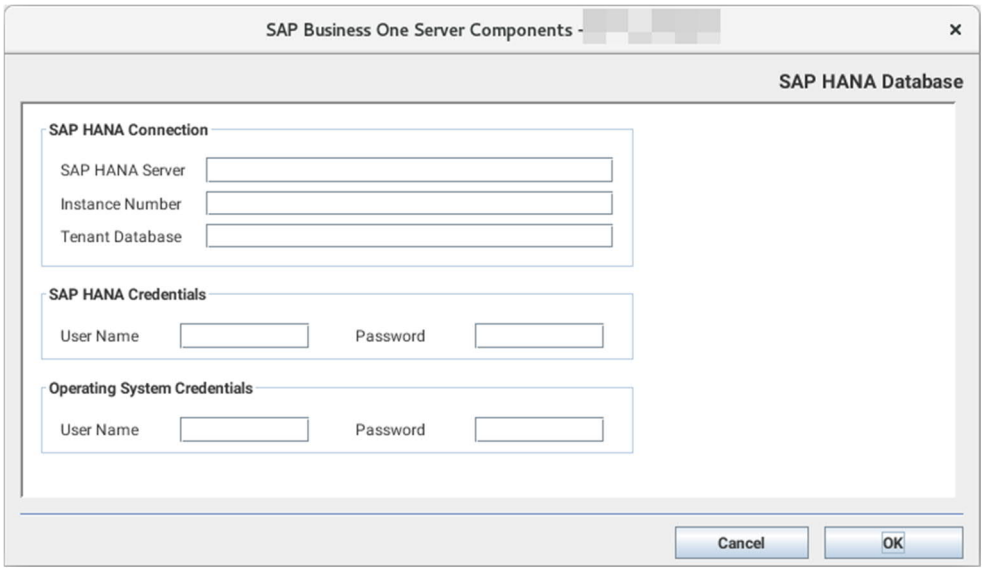
18. In the SAP HANA Databases for Backup window, you can add or delete SAP HANA database servers for backup.



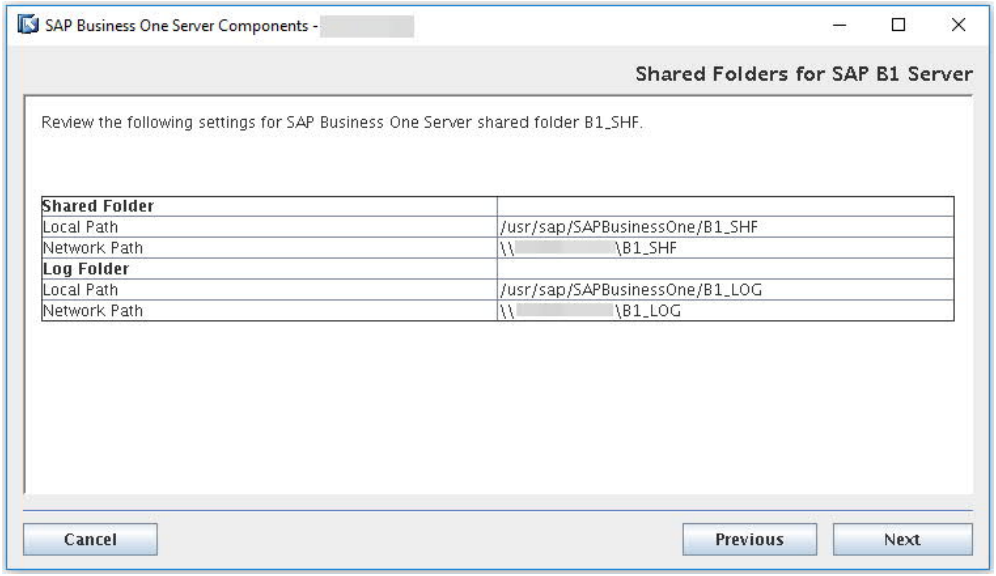
At least one SAP HANA database server must be specified for backup. The SAP HANA database server can be on the same machine (local) as the backup service or on a different machine (remote).

To add an SAP HANA database server, choose Add and enter the connection information in the SAP HANA Database window. Note that you must provide operating system credentials (for example, `root` user credentials) for remote servers, and the user must be a member of the root group.

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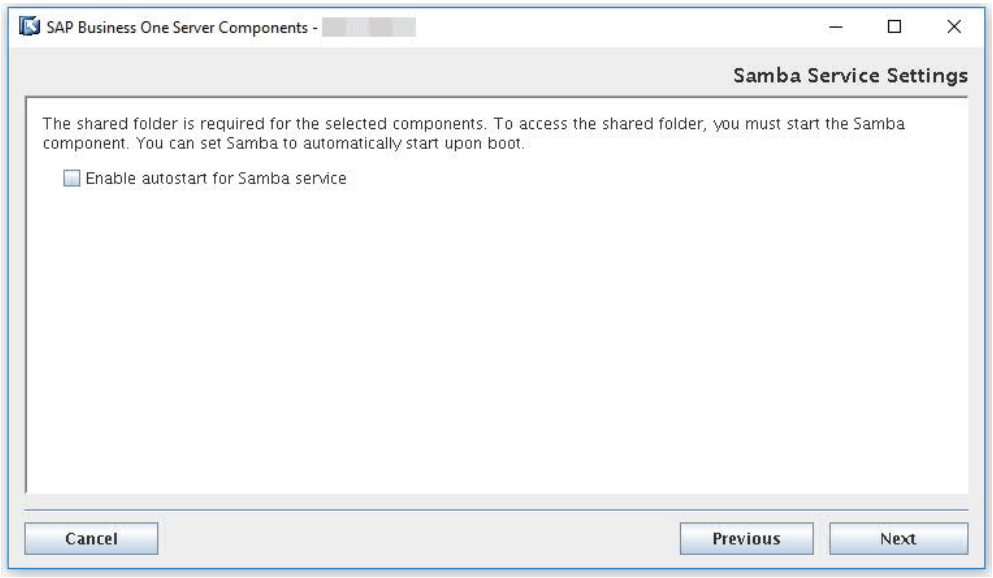


19. If you choose to install or upgrade the app framework, the Restart Database Server window appears. Choose one of the following options:
    - Manual Restart: Select this option if you want to restart the server on your own. Note that you must restart the SAP HANA server before you begin using the app framework.
    - Automatic Restart: Select this option to have the server restarted automatically after the setup process is complete.
20. If you chose to install the SAP Business One Server, the Share Folders for SAP B1 Server windows appear. You can see the paths of the shared folder and those of the log folder.



21. In the Samba Service Settings window, you can select to set up AutoStart for the Samba service upon boot.

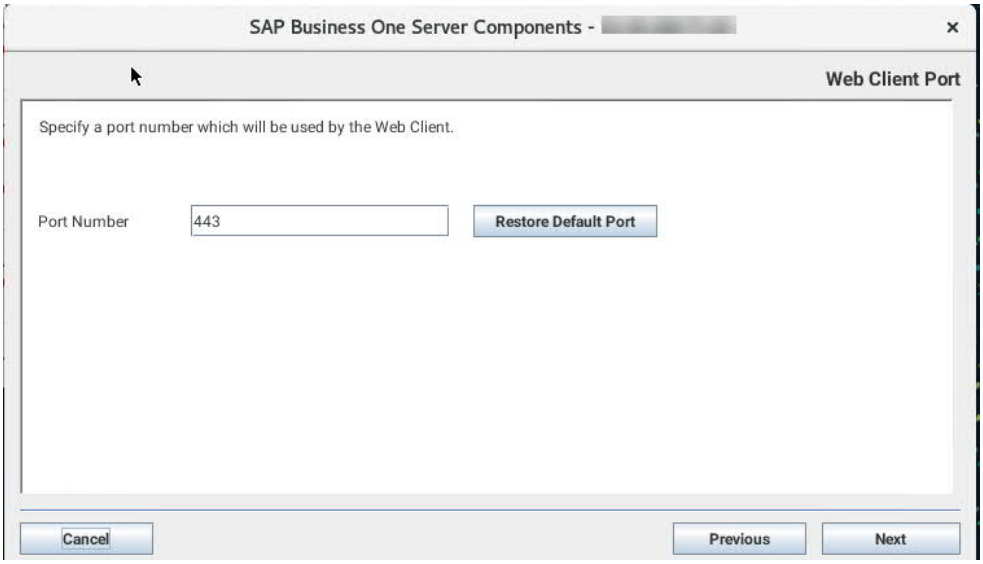
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22. If you choose to install Web Client, the Web Client Port window appears. In the Web Client Port window, specify a port number that is to be used by the Web Client component and choose Next. The default port number is 443.

    Note

    The port number must be within the 0-65536 range.

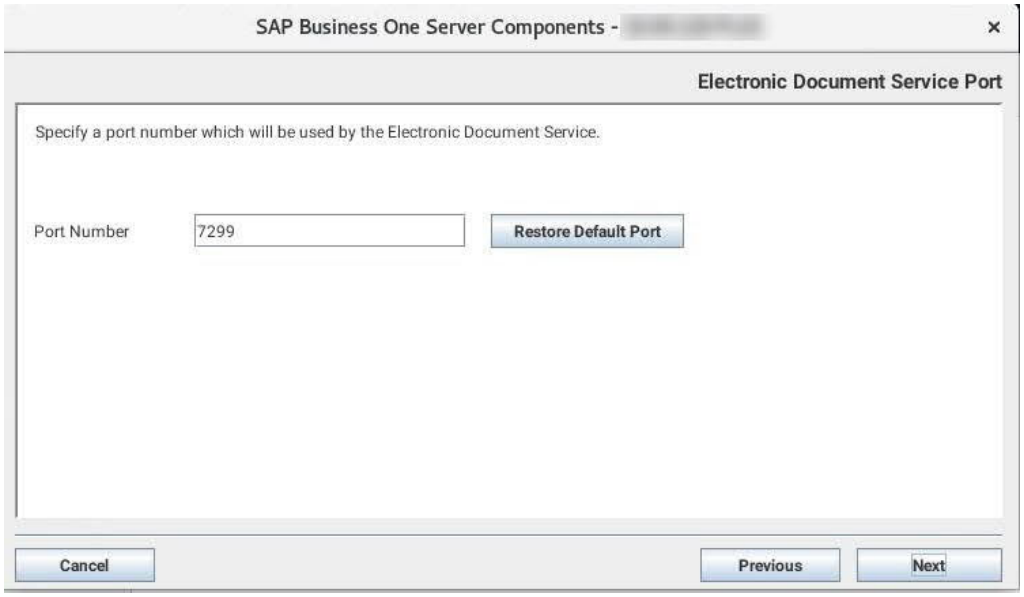


23. If you choose to install Electronic Document Service, the Electronic Document Service Port window appears. In this window, specify a port number that is to be used by the Electronic Document Service component and choose Next. The default port number is 7299.

    Note

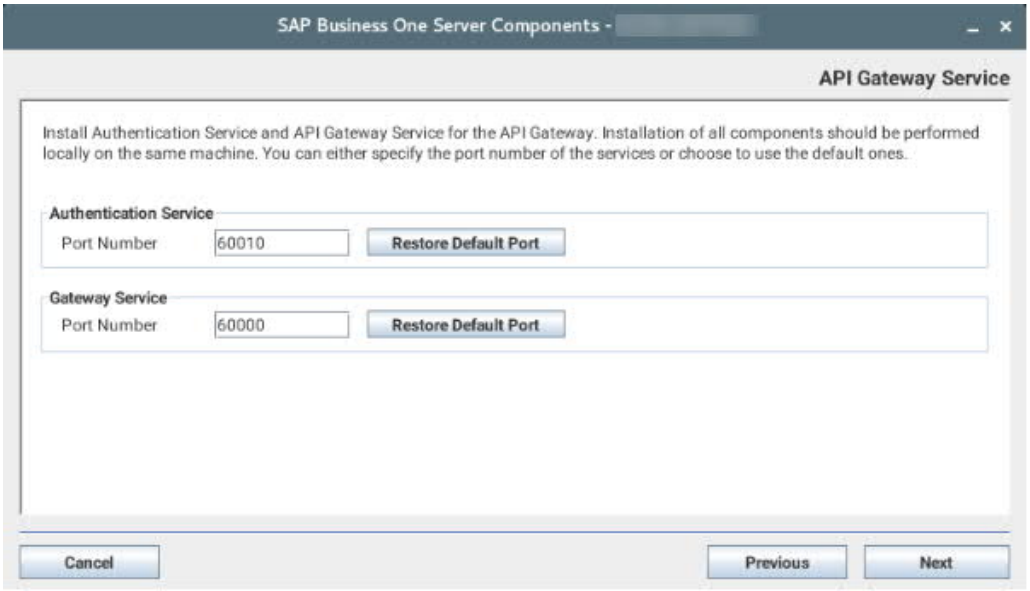
    The port number must be within the 0-65535 range.

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24. If you choose to install API Gateway Service, the API Gateway Service window appears. In this window, specify port numbers that are to be used by the API Gateway Service components and choose Next. The default port number for Authentication Service is `60010` and the default port number for Gateway Service is `60000`.

    > **Note**
    >
    > The port number must be within the 0-65535 range.



25. In the Windows Domain User Authentication (Single Sign-On) window, do one of the following:
    - If you want to use the single sign-on function for SAP Business One, version for SAP HANA, select the Use domain user authentication radio button, specify all required information, and choose Next.

      > **Note**
      >
      > The fully-qualified domain name must be the full name in upper case.

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The domain user name is case-sensitive.

Make sure that the UTC time on your Linux server is the same as that on your Windows domain controller; otherwise, you cannot proceed with the installation.

- If you have not registered a domain user account as the Service Principal Name (SPN), make sure that the domain user account specified here is the one that you intend to use for SPN registration. For more information, see Enabling Single Sign-On.

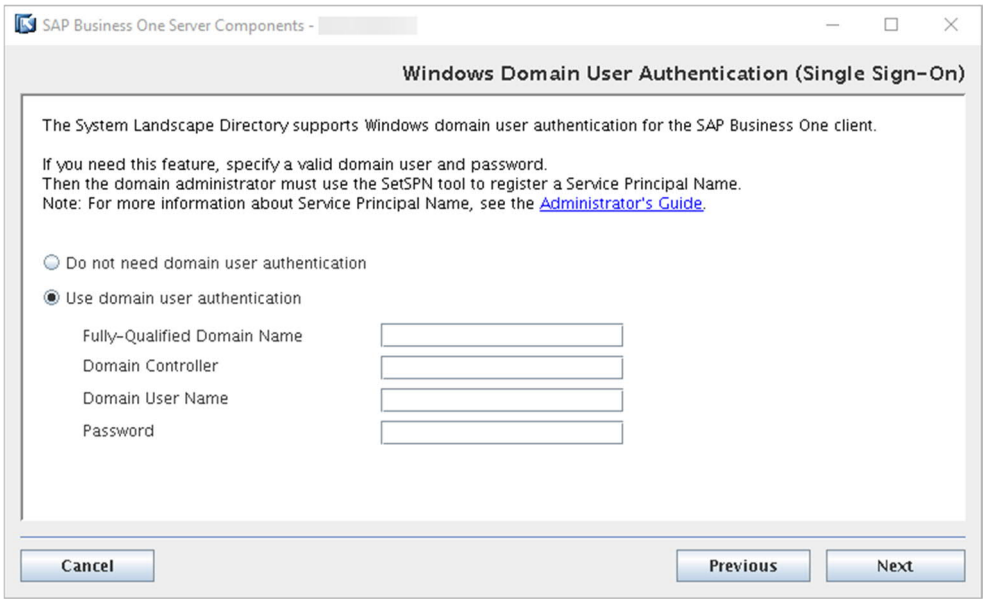
  Recommendation

  As this domain user is a service user that functions purely for the purpose of setting up single sign-on, we highly recommend that you create a new domain service user and do not assign any additional privileges to the user other than the logon privilege. In addition, keep the user's password unchanged after enabling single sign-on; otherwise, single sign-on may stop working.

- If you do not want to use the single sign-on function, select the Do not need domain user authentication radio button and choose Next.

  Caution

  If you do not specify domain user information during installation of server tools, you will not be able to activate the single sign-on function after installation. For more information, see Enabling Single Sign-On.



26. In the Review Settings window, review your settings carefully before proceeding to execute the installation. If you need to change your settings, choose Back to go to relevant windows; otherwise, choose Install to start the installation.

    If you want to save the current settings to a property file for a future silent installation, choose Save Settings. For more information, see Silent Installation.

    Caution

    The property file generated in this way does not contain the parameter `FEATURE_DATABASE_TO_REMOVE`, which is required by silent uninstallation. You must manually add the parameter to the property file before performing silent uninstallation.

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Passwords will also be saved in the property file. We recommend that you delete the passwords from the saved property file and enter the passwords manually before you perform the next silent installation.

27. In the Setup Progress window, when the progress bar displays 100%, proceed with one of the following options:
    - If all of the selected components installed successfully, choose Next to finish the installation.
    - If one or more components failed to be installed, choose Roll Back to restore the system. After the rollback progress is complete, in the Rollback Progress window, choose Next to finish the installation.

      In addition, if you selected to install the system schema `SBOCOMMON`, you must delete it manually from the SAP HANA server later.
28. In the Setup Process Completed window, review the installation results showing which components have been successfully installed and which have not.
29. To exit the wizard, choose Finish.

Results

Log

In the finish window, you can select the Log file or Log folder link to view the detailed installation log. The installation log `B1Installer_<Timestamp>.log` (for example, `B1Installer_201403281100.log`) is stored at `<Installation Folder>/logs` (for example, `/usr/sap/SAPBusinessOne/logs`); an additional log file `B1Installer_CurrentRun.log` was also created for the current installation.

After the installation, you can check the runtime logs for various services at `<Installation Folder>/Common/tomcat/logs`.

Service Users

SAP Business One services on Linux run under the SAP Business One service user `B1service0`; user permissions for this user account should not be changed.

An operating system user `b1techuser` (repository access user) is created and used to move log files from client machines to a central log folder in the shared folder `b1_shf`. You may change the user in the SLD by editing the server information. The user must be either a local user or a domain user that has write permissions to the central log folder (`\b1_shf\Log`) and read permissions to the entire shared folder.

Database Role `PAL_ROLE`

A database role `PAL_ROLE` is created during the upgrade/installation process of the app framework. All database privileges necessary for using pervasive analytics are assigned to this role.

If you encounter any problems using pervasive analytics after the installation/upgrade, refer to Database Role PAL_ROLE for Pervasive Analytics.

Backup Service

The backup folder is by default located under the SAP HANA installation folder (typically /hana/shared/backup_service/backups); the default backup log file folder is /var/log/SAPBusinessOne/BackupService/logs. If required, you can change the backup folder in the System Landscape Directory by editing the server information. For more information, see Registering Database Instances on the Landscape Server.

An operating system user `<sid>adm:sapsys` (for example, `ndbadm:sapsys`) has been created on the machine where the backup service is installed. All server backups and company schema exports are stored under the name

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of this user. The backup folder and the working folder are shared by the NFS server and are mounted on each SAP HANA server. These mount points are not removed when you uninstall the backup service. There, if you want to install the backup service on a different server later, to ensure the installation is successful, you must do either of the following:

- Before the installation, remove the mount points manually from all the SAP HANA servers that used the old backup service.
- During the installation, specify a different backup folder.

If you want to register new SAP HANA database servers with the backup service after the installation or upgrade, you must reconfigure the system. Note that the backup paths must be set properly to have successful server backup. For more information, see Reconfiguring the System.

For any SAP HANA servers that are installed on a different machine than the backup service, you must perform some manual steps to be able to delete older SAP HANA server backups directly from the SLD control center. For instructions, see SAP Note 2272350.

Others

While validation is performed at the end of each installation and upgrade process, you can also perform validation by yourself. For more information, see Validating the System.

After the installation or upgrade, you can reconfigure the system. For example, if you have changed the password for the database user specified during the installation, you must update this information with SAP Business One; or you may want to change the backup folder (which you can also change in the SLD). For more information, see Reconfiguring the System.

3.1.2.1 Installation with Multiple Tenant Databases

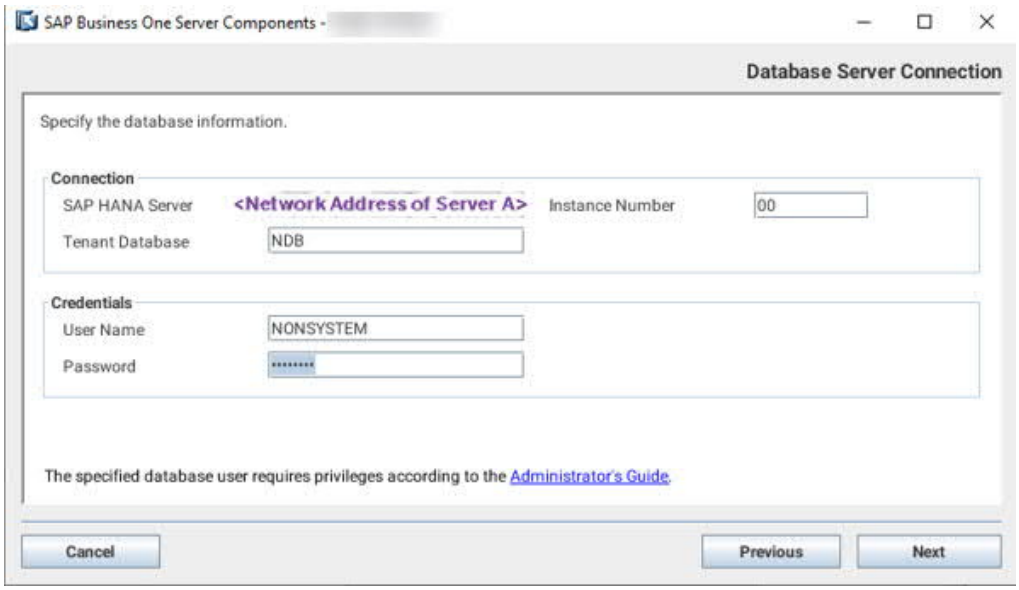
When installing SAP Business One 10.0, version for SAP HANA, you can install the components on different tenant databases.

Procedure

1. Install SAP Business One landscape management components and other components on Server A.
    1. Copy the product package to Server A.
    2. Install the following Linux-based components:
        - Landscape Management, including System Landcape Direcotry (SLD), Extension Manager and License Manager
        - SAP Business One Server
        - Other components that you want to install

        In the Database Server Connection window, enter the network address of Server A as SAP HANA Server and specify the name of the first tenant database (for example, **NDB**).

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For more information about installing the server components on a Linux server, see Wizard Installation.

As a result, all installed services on Server A display on the Service tab in the SLD control center and are bound to the first tenant database (for example, NDB@<Server Name/IP of Server A>: 30013). For more information about services in the SLD, see Adding Services in the System Landscape Directory.

2. Create a new tenant database (for example, HDB) on Server A by performing the following steps in the SAP HANA studio:
    1. Log on to the SAP HANA studio.
    2. Connect to the relevant SYSTEMDB in Server A and navigate to Open SQL Console.
    3. In the SQL console, execute the following SQL statement as an administrative user to create a new tenant database (for example, **HDB**):

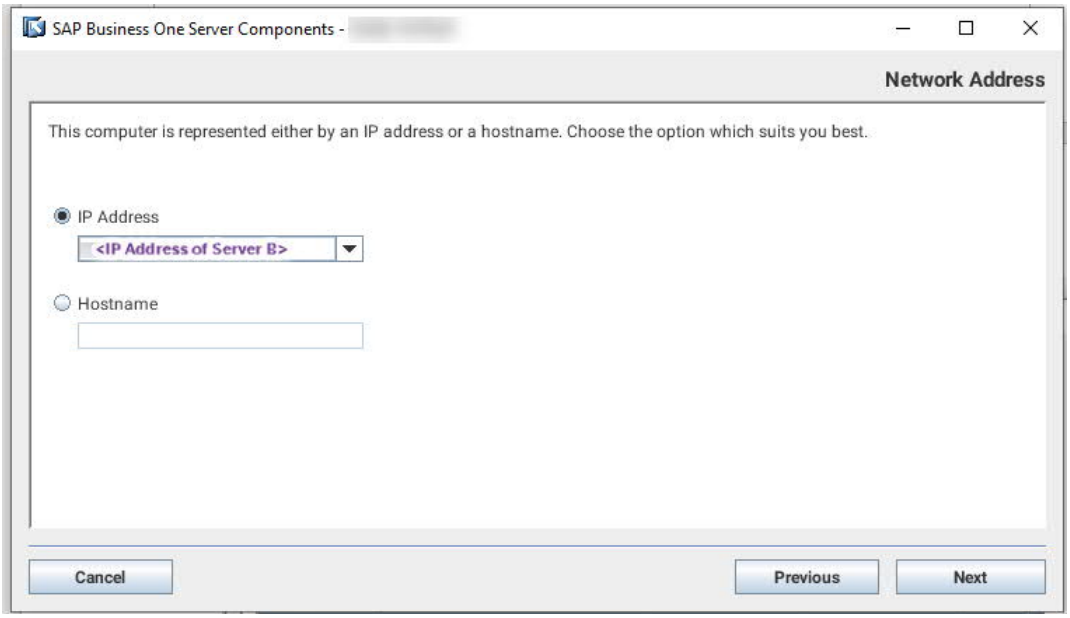
        ```
        create database <tenant DB name> ADD 'scriptserver' system user password <password>
        ```

        For example: `create database HDB ADD 'scriptserver' system user password 4321`
3. Install SAP Business One components on Server B with the newly created tenant database (for example, HDB).
    1. Copy the product package to Server B.
    2. Select the following Linux-based components to install.
        - SAP Business One Server.
        - Other components that you want to install.

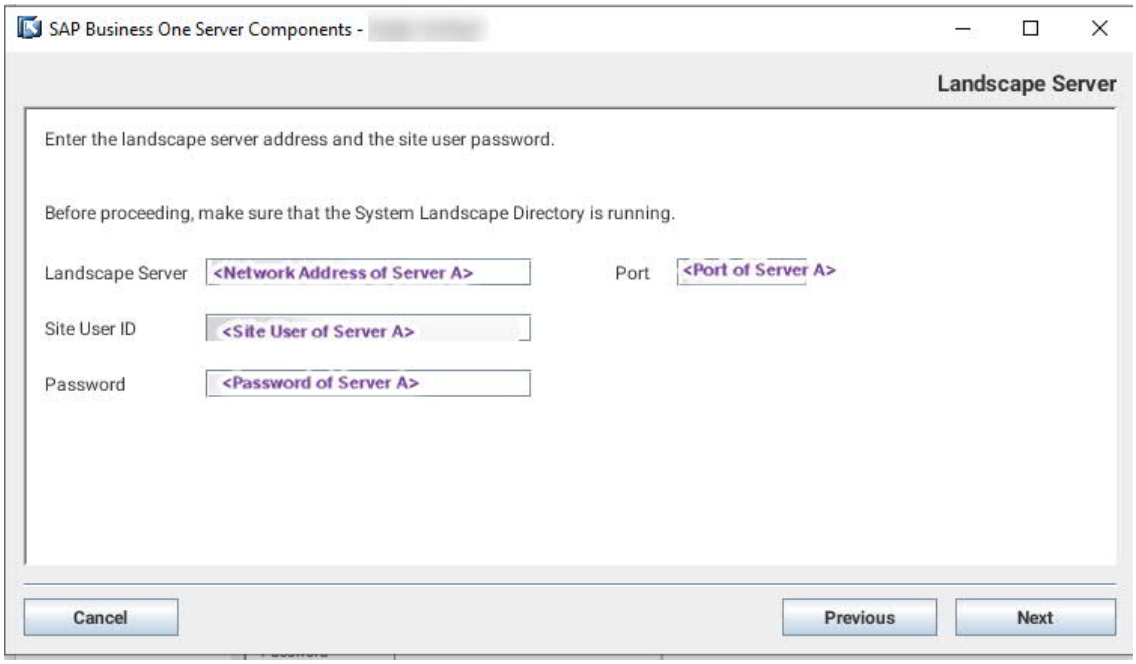
        Note

        You do not need to install the landscape management components (System Landsape Directory, Extension Manager, License Manager) on Server B.
    3. In the Network Address window, enter the IP address or hostname of Server B.

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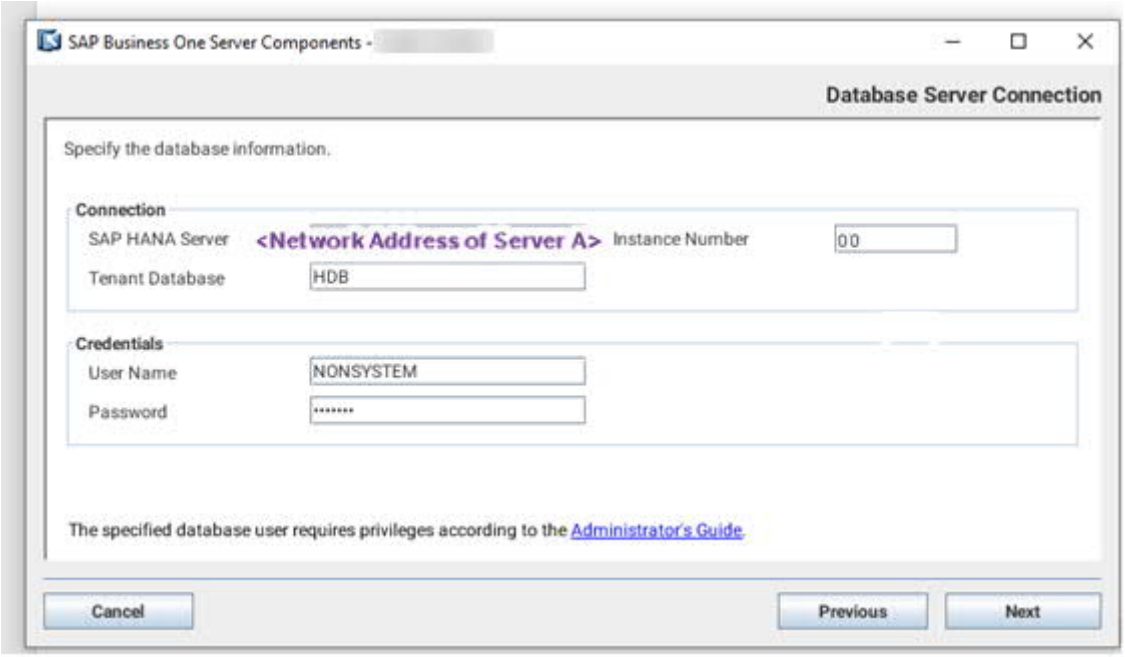


4. In the Landscape Server window, enter the landscape server information on Server A.



5. In the Database Server Connection window, enter the network address of Server A as SAP HANA Server and the second tenant database as Tenant Database (for example, **HDB**):

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As a result, all installed services on Server B display on the Service tab in the SLD control center and are bound to the second tenant database (for example, HDB@<Server Name/IP of Server A>: 30013).

3.1.3 Silent Installation

You can install (or upgrade) the Linux server components in silent mode using command-line arguments and passing parameters from a pre-filled property file. To do so, enter the following command line:

```
install -i silent -f <Property File Path> [--debug]
```

Property File Format

In the property file, separate parameter values by a comma. The format is as below:

- Single value: `Parameter=Value`
- Multiple values: `Parameter=Value, Value`

Example

```
SELECTED_FEATURES=B1ServerToolsTomcat, B1ServerToolsJava64
```

Note

If a component has already been installed and is up-to-date, the installer ignores the component even if you include it in the selected features.

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Parameters

The table below lists all parameters that are required or supported:

Parameter	Description
B1S_SAMBA_AUTOSTART	Value options: • **none**: Do not use this option; for internal use only. • **true**: Sets Samba to automatically restart after the installation, which is required by the SAP Business One server. • **false**: You must restart Samba after installing the SAP Business One server.
B1S_SHARED_FOLDER_OVERWRITE	Value options: • **true**: Overwrites the shared folder b1_shf if it already exists. • **false**
B1S_TECHUSER_PASSWORD	The password for the repository access user. The setup program automatically sets the value.
B1_SERVICE_USER	The setup program automatically sets the value for this parameter.
BCKP_BACKUP_COMPRESS	Optional parameter. Value options: • **true**: Compresses each company schema export into a zip file to save disk space. • **false**: Does not compress company schema exports.
BCKP_BACKUP_SIZE_LIMIT	Optional parameter. Sets an upper limit (measured in megabytes) on the overall size of the backup folder. If the limit is exceeded, older server backups and company schema exports are deleted following the first-in-first-out principle.
BCKP_PATH_LOG	Path to the folder where the log files for the backup service are stored.
BCKP_PATH_TARGET	Path to the folder where database server backups and company schema exports are stored. After installation, you can change the backup folder in the System Landscape Directory by editing the server. For more information, see Registering Database Instances on the Landscape Server.
BCKP_PATH_WORKING	Path to the temporary folder where various backup operations are performed (for example, compressing and decompressing files).
BCKP_HANA_SERVERS	SAP HANA database servers that use the backup service.

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Parameter	Description
	Specify the parameter value in XML format, following the example below: **BCKP_HANA_SERVERS=<servers><server><system address="RemoteAddress"/><database instance="00" port="30013" tenant-db="SBO" user="SYSTEM" password="manager"/></server></servers>** Note that the system user and password are mandatory for remote systems and optional for local systems. As well, the user must be a member of the root group.
CD_REPOSITORY_ACTION	Optional parameter relevant only in the installation of SLD. If you intend to access the SLD control center in a Web browser to perform remote administrative tasks, you should create the CD repository. Value options: • **none**: Not create the CD repository. • **create**: Create the CD repository.
CENTRAL_LOG_ACTION	Optional parameter relevant only in the installation of SLD. If you intend to access the SLD control center in a Web browser to perform remote administrative tasks, you should create the Central Log directory. Value options: • **none**: Not create the Central Log directory. • **create**: Create the Central Log directory.
DELETE_B1_SHR	Optional parameter relevant only in the uninstallation process of SAP Business One components. Value options: • **true**: Delete the shared folder during the uninstallation process. • **False**: Default value. Does not delete the shared folder.
HANA_DATABASE_ADMIN_ID	<sid>adm user (for example, **ndbadm**).
HANA_DATABASE_ADMIN_PASSWD	Password for the <sid>adm user.
HANA_DATABASE_INSTANCE	Instance number of an SAP HANA database server.
HANA_DATABASE_SERVER	SAP HANA database server address (hostname or IP address).
HANA_DATABASE_SERVER_PORT	SAP HANA database port 3xx13, where xx represents the instance number (for example, **30013**).
HANA_DATABASE_TENANT_DB	Name of tenant database in the multiple container mode.
HANA_DATABASE_USER_ID	Name of an SAP HANA database user that has appropriate privileges. For more information, see Database Privileges for Installing, Upgrading, and Using SAP Business One.

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Parameter	Description
HANA_DATABASE_USER_PASSWORD	Password for the SAP HANA database user. **Note** You must have changed the initial password for the user (for example, `manager` for the SYSTEM user) and the password must comply with the password policy of the particular instance. For more information, see the SAP HANA Administration Guide at http://help.sap.com/hana_platform.
HANA_OPTION_RESTART	Relevant only in the following situations: • Installation/Upgrade: You select the app framework for installation or upgrade. • Uninstallation: You select the SSL-enabled app framework for uninstallation. Value options: • **`true`**: Restarts SAP HANA after the installation (or upgrade, uninstallation). • **`false`**: You need to restart SAP HANA manually to apply the changes.
HANA_SYSTEM_USER_ID	Name of an operating system user. The system user is mandatory for remote systems, and the user must be a member of the root group.
HANA_SYSTEM_USER_PASSWORD	Password for the operating system user.
FEATURE_DATABASE_TO_REMOVE	[Optional] For uninstallation only Choose to remove one or more SAP Business One server component schemas (not company schemas) during the uninstallation. Note that a schema can be removed only if the corresponding component is selected for uninstallation. **Example** If you do not uninstall the SAP Business One server, the SBOCOMMON schema cannot be removed and **`FEATURE_DATABASE_TO_REMOVE=B1ServerCOMMONDB`** is ignored. If you include the following lines in the property file, the SAP Business One server will be uninstalled along with SBOCOMMON, while all demo databases (if any exist) will be kept: **`SELECTED_FEATURES=B1Server`** **`FEATURE_DATABASE_TO_REMOVE=B1ServerCommonDB`** Value options:

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Parameter	Description
	• **B1ServerToolsSLD**: SLD schema Note The parameter used for removing the SLD schema before PL02 is HANA_SLD_DATABASE_UNINSTALL_REMOVE (**true**, **false**, **none**). If you reuse an old property file, we strongly recommend that you remove the retired parameter. Otherwise, if you specify **HANA_SLD_DATABASE_UNINSTALL_REMOVE=true**, even if **FEATURE_DATABASE_TO_REMOVE=B1ServerToolsSLD** does not exist in the property file, the SLD schema will be removed. On the other hand, **HANA_SLD_DATABASE_UNINSTALL_REMOVE=none/false** does not conflict with **FEATURE_DATABASE_TO_REMOVE=B1ServerToolsSLD**; if these parameters exist together, the retired parameter is ignored. • **B1ServerCommonDB**: SBOCOMMON schema Note If you saved your previous installation settings using the Save Settings option when running the server components setup wizard in GUI mode, this parameter was not among the saved settings. Before performing a silent uninstallation, you must manually add this parameter and specify its value. For more information, see Wizard Installation. For the return codes used in the server components setup wizard, see Appendix 4: List of Return Codes Used in the Server Components Setup Wizard.
INSTALLATION_FOLDER	Installation folder (for example, **/usr/sap/SAPBusinessOne**)
INST_FOLDER_CORRECT_PERMISSIONS	Value options: • **true**: Grants required permissions on the installation folder. Always use this option. • **false**
LANDSCAPE_INSTALL_ACTION	Specify a landscape for this new System Landscape Directory installation. Value options: • **create**: Creates a new landscape • **connect**: Connects to the existing landscape.

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Parameter	Description
LICENSE_SERVER_NODE	Select a node type for the new License Server installation. Install the license server as either a standalone or high availability node if you require multiple hosts for high availability. Value options: • **standalone**: Standalone node • **primary**: High availability primary node • **secondary**: High availability secondary node
LICENSE_SERVER_PRIMARY_ADDRESS	The address of the primary node of license server.
LICENSE_SERVER_PRIMARY_PORT	The port number of the primary node of license server.
LICENSE_SERVER_VIRTUAL_URL	The address that is shared among multiple servers. If one node fails, the vitual IP address is automatically reassigned to another node.
LOCAL_ADDRESS	The network address of the current machine.

SELECTED_FEATURES	List of features that you want to install or upgrade.
	Separate feature names with a comma; the order of the features does not matter. If you do not specify a feature, all features will be installed.
	Value options:
	• **B1ServerTools**: SAP Business One server tools
	  o **B1ServerToolsLandscape**: Landscape management services
	  o **B1ServerToolsSLD**: System Landscape Directory
	  o **B1ServerToolsLicense**: License service, which depends on the System Landscape Directory to be installed
	  o **B1ServerToolsJobService**: Job service
	  o **B1ServerToolsMobileService**: Mobile service
	  o **B1ServerToolsEnxtensionManager**: Extension Manager
	• **B1ServerToolsXApp**: App framework
	• **B1SLDAgent**: SLD Agent
	• **B1BackupService:** Backup service
	• **B1Server**: SAP Business One server
	  o **B1ServerSHR**: Shared folder b1_shf
	  o **B1ServerCommonDB**: SBOCOMMON schema
	  o **B1ServerHelp**: Online help files
	  o **B1ServerHelp_XX**: “XX” represents the abbreviation of an SAP Business One localization.
	  o **B1ServerAddons**: SAP Business One add-ons
	  o **B1ServerOI**: Microsoft Outlook integration server

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Parameter	Description
	• **B1AnalyticsPlatform**: SAP Business One analytics powered by SAP HANA **B1ServiceLayerComponent**: SAP Business One Service Layer
SERVICE_PORT	Port number for the System Landscape Directory (for example, **40000**).
SITE_USER_ID	Site user name that will be used to access the System Landscape Directory (for example, **B1SiteUser**).
SITE_USER_PASSWORD	Password for the specified site user.
SLD_CERTIFICATE_ACTION	Certificate for HTTPS encryption. Value options: • **self**: Self-signed certificate • **p12**: PKCS12 certificate
SLD_CERTIFICATE_FILE_PATH	Path to the PKCS12 certificate.
SLD_CERTIFICATE_PASSWORD	Password for the PKCS12 certificate.
SLD_DATABASE_ACTION	Specify the SLD schema: • **create**: Create a new SLD schema • **reuse**: Connect to the existing SLD schema
SLD_DATABASE_NAME	Name of the SLD schema that is to be created on the specified SAP HANA database instance (for example, **SLDDATA**).
SLD_SERVER_ADDR	Landscape server address; needed when you install a feature separately from the System Landscape Directory.
SLD_SERVER_PORT	Landscape server port number; needed when you install a feature separately from the System Landscape Directory.
SLD_SERVER_PROTOCOL	Communications protocol for the System Landscape Directory. Value options: • **none**: Do no use this option; for internal use only • **http**: Allowed for Cloud solutions only • **https**: Always use this option for on-premises solutions
SLD_SERVER_TYPE	System Landscape Directory type. Value options: • **none**: Do no use this option. • **op**: On-premises solution • **od**: Cloud solution
SLD_WINDOWS_DOMAIN_ACTION	Value options: • **skip**: Does not activate the single sign-on function.

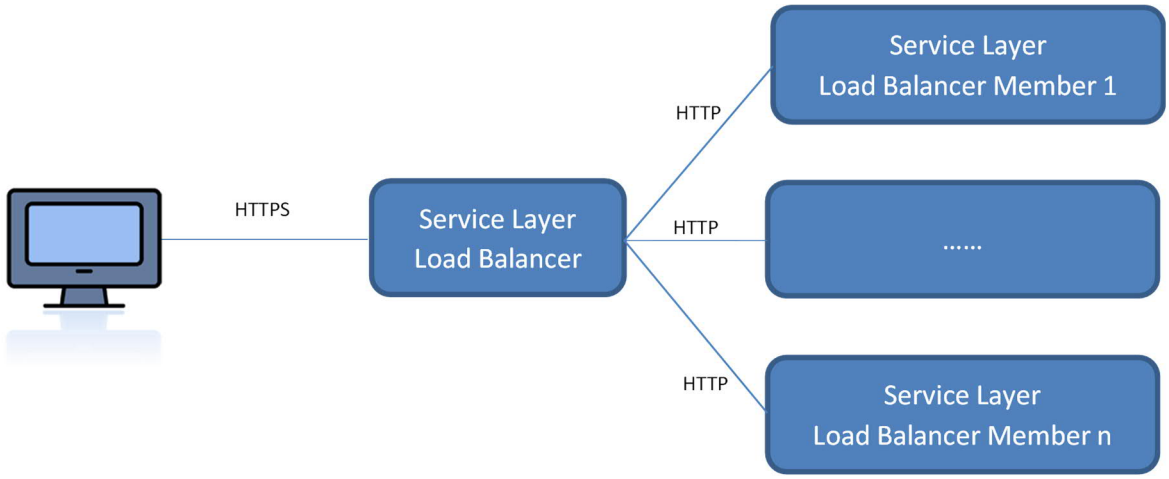
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Parameter	Description
	• **use**: Activates the single sign-on function and requires the following four parameter values; for more information, see Enabling Single Sign-On.
SLD_WINDOWS_DOMAIN_CONTROLLER	Windows domain controller.
SLD_WINDOWS_DOMAIN_NAME	Fully-qualified domain name.
SLD_WINDOWS_DOMAIN_USER_ID	Domain user name.
SLD_WINDOWS_DOMAIN_USER_PASSWORD	Password for the domain user.
SL_LB_MEMBER_ONLY	Value options: • **true**: Installs only balancer members. • **false**: Installs both the load balancer and balancer members.
SL_LB_PORT	Port for the Service Layer load balancer.
SL_LB_MEMBERS	Service Layer load balancer members. Format: **<Server Name/IP Address>:<Port>,<Server Name/IP Address>:<Port>…** At least one load balancer member must be specified. • If the specified server is the machine on which you will perform the installation, the balancer member is installed. • If the specified server is a different machine, two situations are possible: o If you set SL_LB_MEMEBER_ONLY to **true**, the installation will fail because remote installation is not possible. o If you set SL_LB_MEMBER_ONLY to **false**, the balancer member will be added to the load balancer member pool (cluster).
SL_THREAD_PER_SERVER	Maximum number of threads to be run for each balancer member.

3.2 Installing the Service Layer

The Service Layer is an application server that provides Web access to SAP Business One services and objects and uses the Apache HTTP Server (or simply Apache) as the load balancer, which works as a transit point for requests between the client and various load balancer members. The architecture of the Service Layer is illustrated below (Note that the communication between the load balancer and the load balancer members is transmitted via HTTP instead of HTTPS.):

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You may set up the Service Layer in one of the following ways:

- The load balancer and load balancer members are all installed on different physical machines. Note that at least one load balancer member must be installed on the same machine as the load balancer.
- [Recommended] The load balancer and all load balancer members are installed on the same machine.

Remote installation of the Service Layer is not supported. For example, if you intend to install the load balancer on server A and two load balancer members on server B and C, you must run the server components setup wizard on each server separately.

Procedure

> **Note**
>
> For more information about the silent installation of the Service Layer, see Silent Installation.

1. Log on to the Linux server as `root`.
2. In a command line terminal, navigate to the directory …`/Packages.Linux/ServerComponents` where the `install` script is located.
3. Start the setup program from the command line by entering the following command:

   ```
   ./install
   ```

   > **Note**
   >
   > If you receive an error message: “Permission denied”, you must set execution permission on the installer script to make it executable. To do so, run the following command:
   >
   > ```
   > chmod +x install
   > ```

   The setup process begins.
4. In the welcome window of the setup wizard, choose Next.
5. In the Specify Installation Folder window, specify a folder in which you want to install the Service Layer and choose Next.
6. In the Select Features window, select Service Layer.
7. In the Specify Security Certificate window, specify a security certificate and choose Next. You can also choose to use a self-signed certificate.

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8. In the Database Server Specification window, specify the information of your SAP HANA database server.
9. In the Service Layer window, specify the following information for the Service Layer and then choose Next:
   - Install Service Layer Load Balancer and Port: Select the checkbox to install the load balancer and specify the port for the load balancer.

     When installing the load balancer, you need to specify the following information:

     - Port for the load balancer
     - Server name or IP address of all load balancer members, as well as their ports.

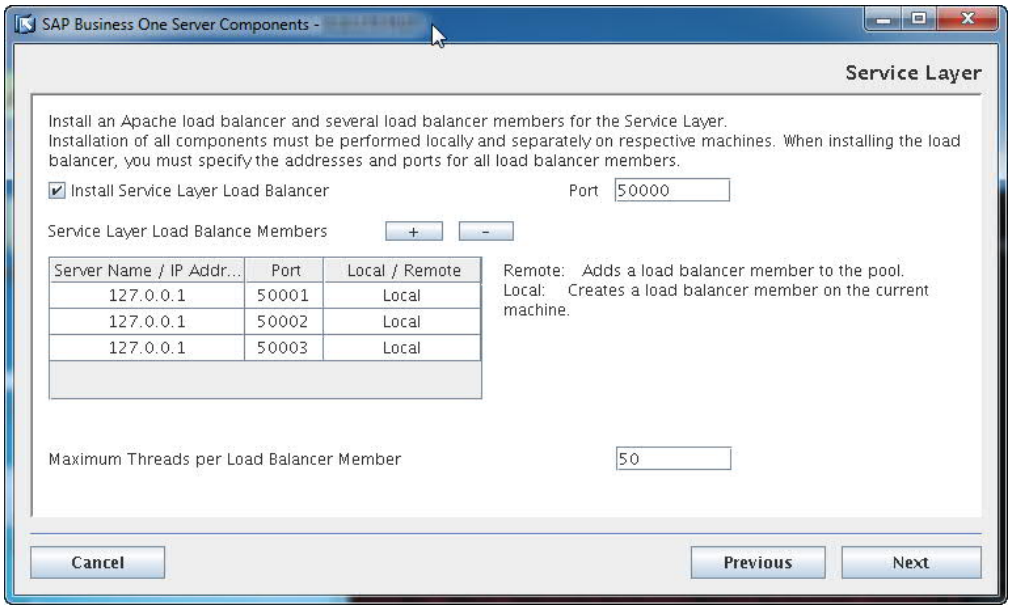
     Note that the load balancer and load balancer members must use a different port for each if installed on the same machine.
   - Service Layer Load Balancer Members: Specify the server address and port for each load balancer member.

     If you have selected the Install Service Layer Load Balancer checkbox, you can specify load balancer members either on local (current) or remote (different) machines. If on the local machine, the installer will create a local load balancer member; if on a remote machine, the load balancer member will be added to the pool (cluster) of load balancer members but you need to install the specific load balancer member on its own server.

     If you have not selected the checkbox, you cannot edit the server address, which is automatically set to `127.0.0.1` (`localhost`). All specified load balancer members will be created.

     > **Note**
     >
     > Ipv6 addresses are not allowed.

   - Maximum Threads per Load Balancer Member: Define the maximum number of threads to be run for each load balancer member.



10. In the Review Settings window, review your settings and then choose Install to start the installation.
11. In the Setup Progress window, when the progress bar displays 100%, choose Next to finish the installation.
12. In the Setup Process Completed window, review the installation results and then choose Finish to exit the wizard.

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Results

The Service Layer runs under the SAP Business One service user `B1service0` as all other SAP Business One services on Linux; user permissions for this user account should not be changed.

After installing the Service Layer, you can check the status of each balancer member in the balancer manager. To do so, in a Web browser, navigate to **`https://<Load Balancer Address>:<Load Balancer Port>/balancer-manager`**.

When installation is complete, the default Web browser on your server opens with links to various documentation files (for example, the user guide and the API reference). The documentation files are stored in the `<Installation Folder>/ServiceLayer/doc/` folder. In addition, you can access the API help document for the Service Layer in a Web browser from anywhere via this URL: **`https://<Load Balancer Address>:<Load Balancer Port>`**. Note that only the following Web browsers are supported:

- Microsoft Internet Explorer 7 and higher
- Google Chrome
- Mozilla Firefox
- Apple Safari

> **Note**
>
> To upgrade the Service Layer to a higher patch level, run the server components setup wizard for the required patch level. For more information, see Upgrading Server Components.

3.3 Installing Windows-Based Server Components

You need to install the following components on the server:

- Server tools, including:
  - Browser Access Service
  - Workflow service
  - Data interface Server
- Remote support platform
- Integration framework

If you want to enable access to the SAP Business One client in a Web browser, follow the instructions in Installing the Browser Access Service.

The installation of remote support platform is performed by a separate installation wizard. For more information, see the Administrator's Guide to the Remote Support Platform for SAP Business One. You can find the guide (RSP_AdministratorGuide.pdf) under ...\Documentation\Remote Support Platform\System Setup\ on the SAP Business One product DVD, or search for related information on SAP Help Portal.

A setup wizard is used for installation as well as for upgrade. The following procedure describes how to install all Windows-based server components (except for the remote support platform, the Browser Access service and the SLD Agent) in a clean environment where no SAP Business One components exist.

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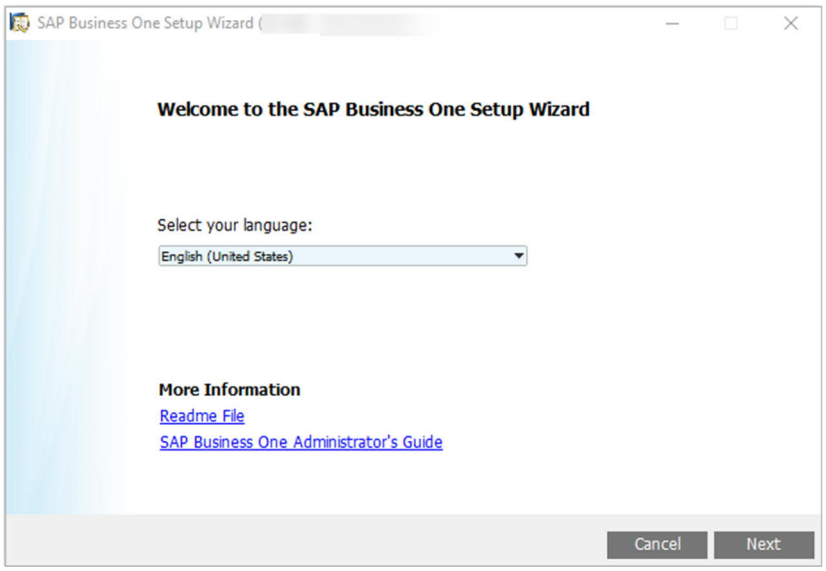
Prerequisites

- You have installed the SLD.
- You have installed the SAP HANA database client for Windows on the Windows server on which you want to install the optional server components.
- You have administrator rights on the machine on which you are performing the installation.

> **Note**
>
> For more information about possible installer issues related to the user account control (UAC) in Microsoft Windows operating systems, see SAP Note 1492196.

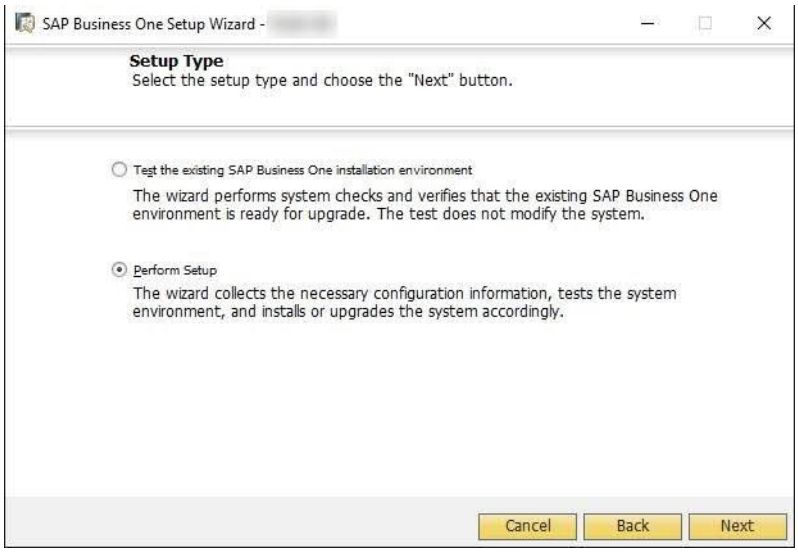
Procedure

1. Navigate to the root folder of the product package and run the setup.exe file.
2. In the welcome window, select your setup language and choose Next.

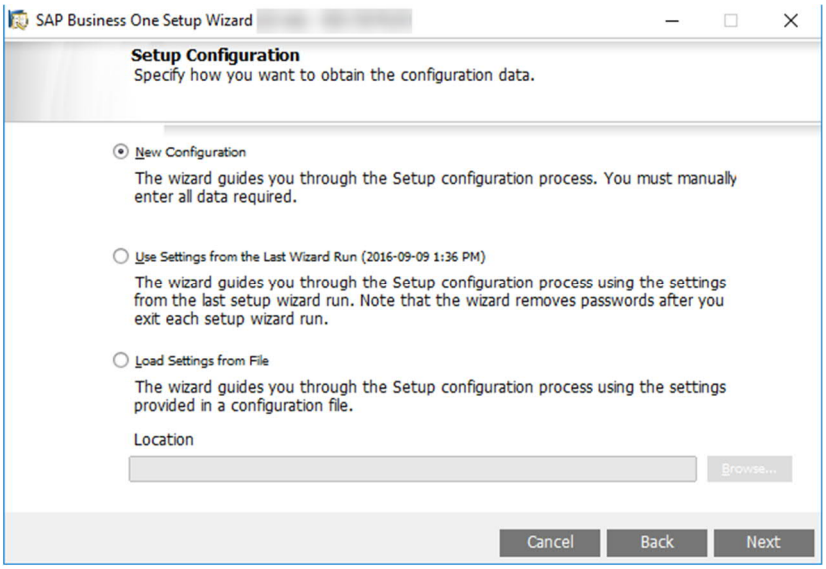


3. In the Setup Type window, select Perform Setup and choose Next.

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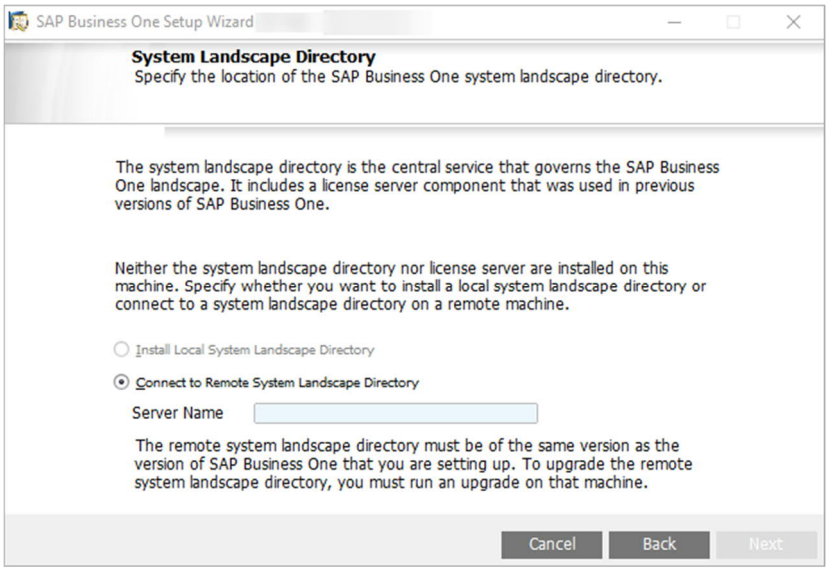


4. In the Setup Configuration window, select New Configuration and choose Next.

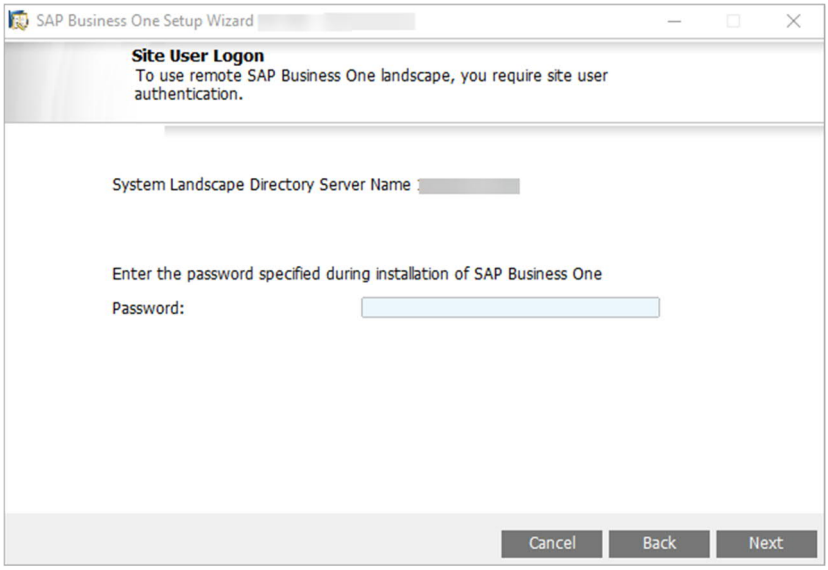


5. In the System Landscape Directory window, select Connect to Remote System Landscape Directory, specify the server, and choose Next.

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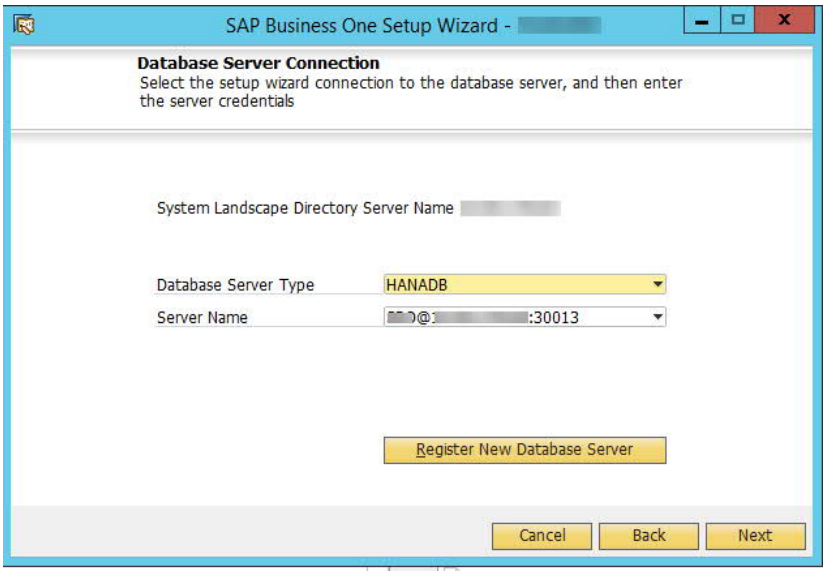


6. In the Site User Logon window, enter the password for the site super user `B1SiteUser` and choose Next.

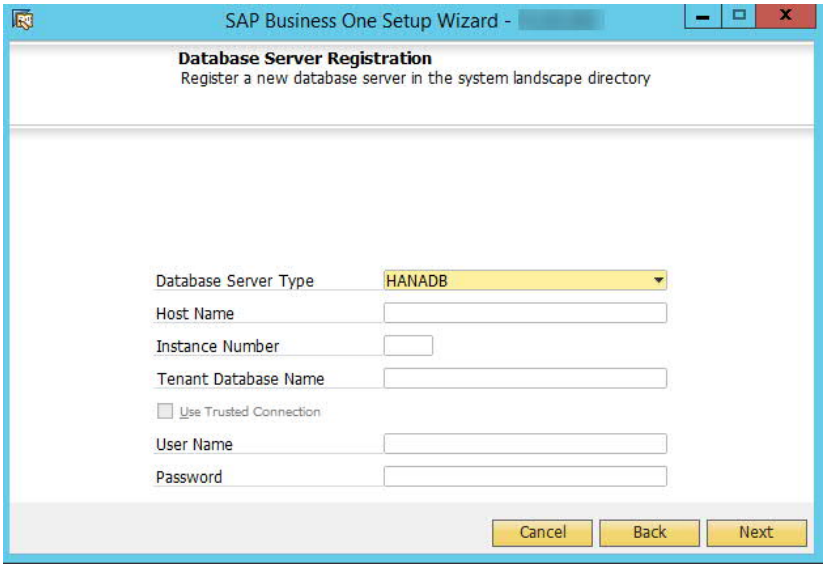


7. In the Database Server Connection window, enter the database server information as follows:
    1. Specify the database server type as HANADB.
    2. From the Server Name dropdown list, select your SAP HANA server instance.
    3. Choose Next.

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To register a new database server in the SLD, choose Register New Database Server and enter the registration information in the Database Server Registration window.



- Host Name: Enter the SAP HANA server address (full hostname or IP address).
- Instance Number: Enter the instance number for your SAP HANA database.

  Caution

  The instance number must be a double-digit number within the **00**-**97** range. If you use a one-digit number, it is automatically converted to a double-digit number (for example, **0** is converted to **00**).
- Tenant Database Name: Enter the name of the tenant database which you intend to use.

  Caution

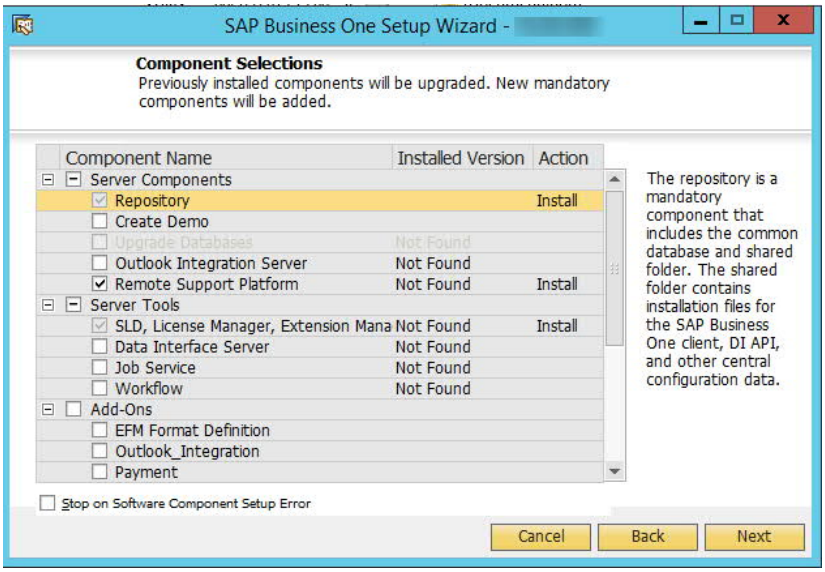
  Make sure the tenant database name starts with an upper case letter and contains only the following characters:

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- Upper case
- Alphanumeric
- Underscore symbols (_)
- If you use the lower case, each small letter is automatically converted to upper case.
- Make sure the tenant database name is not `SYSTEMDB`.

- User Name and Password: Specify a tenant database user and enter the user password.

8. In the Component Selections window, select the appropriate components and choose Next.

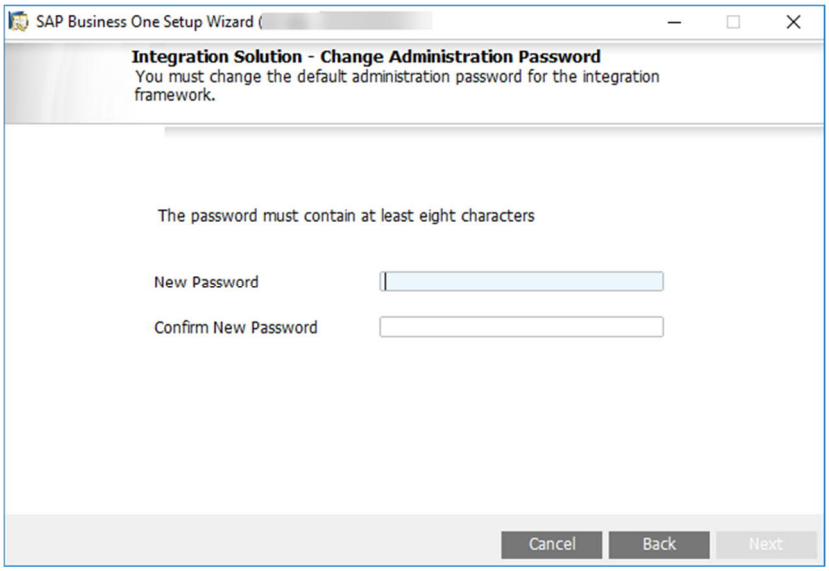


9. For the integration framework, perform the following steps:
   1. In the Integration Solution - Change Administration Password window, enter and confirm a new password for the integration server administrator account (`B1iadmin`).

      Note

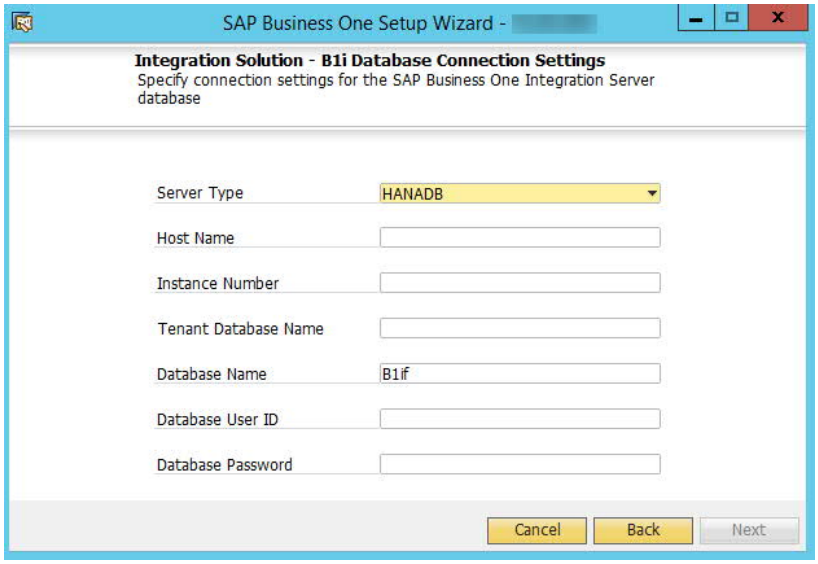
      For security reasons, we recommend that you provide the integration server administrator account (`B1iadmin`) to the system administrator only.

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2. In the Integration Solution - B1i Database Connection Settings window, specify the following:
   - Server Type: From the dropdown list, select HANA.
   - Host Name: Enter the hostname or the IP address of the database server.
   - Instance Number: Specify the instance number for your database server.

     The instance number must be a double-digit number within the **00-97** range. If you use a one-digit number, it is automatically converted to a double-digit number (for example, **0** is converted to **00**).
   - Tenant Database Name: Enter the name of the tenant database which you intend to use.
   - Database Name: Specify a name for the integration framework database. The default database name is `IFSERV`.
   - Database User ID: Enter the user name of a database administrator account.
   - Database Password: Enter the password for the database administrator account.

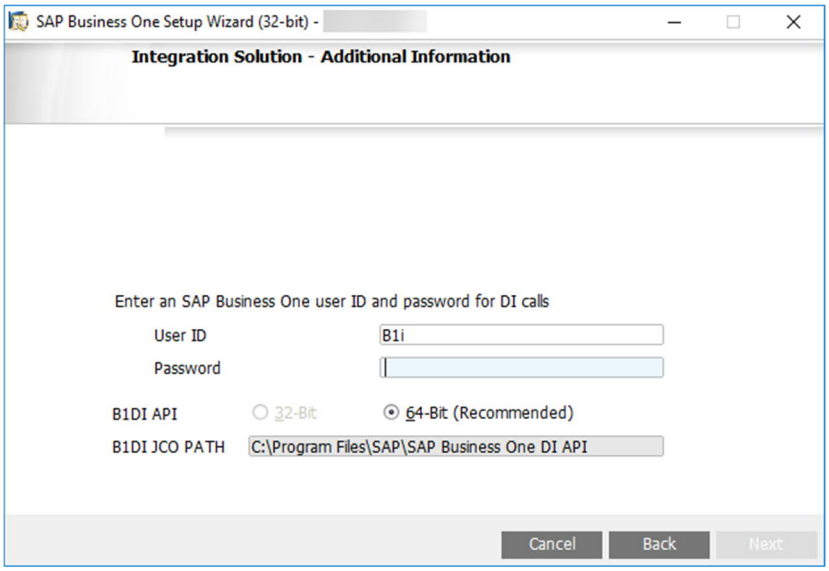


3. In the Integration Solution - Additional Information window, do the following:

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- Enter the connection credentials.

  Specify an SAP Business One user account (`B1i` by default) and password. This user account will be used for DI calls.

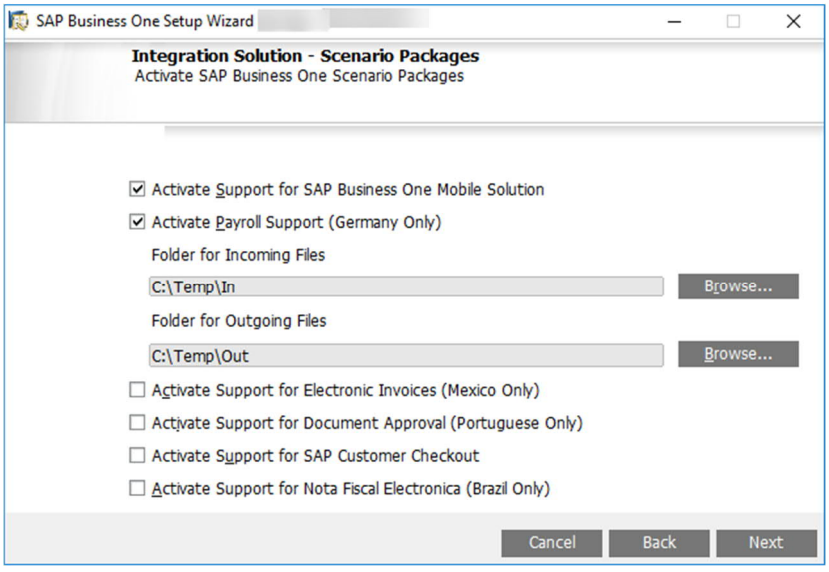


- Select the version of SAP Business One DI API to use.

  We recommend using the 64-bit SAP Business One DI API. For more information, see SAP Note 2066060.

  If a version of DI API is not installed or is not selected for installation, that version of DI API is not available for selection. If no DI API is selected or installed, you cannot proceed with the installation of the integration framework.

4. In the Integration Solution - Scenario Packages window, select the corresponding checkboxes to activate required scenario packages.



10. In the Review Settings window, review the settings you have made and choose Next.

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This window provides an overview of the settings that you have configured for the setup process. To modify any of the settings, edit the values in the table.

11. In the Setup Summary window, review the component list and choose Setup to start the setup process.
12. In the Setup in Process window, wait for the setup to finish.
13. Depending on the results of the upgrade, one of the following windows is displayed:
    - Setup Result: Successful window: If the setup of all components was successful, the wizard opens this window. To continue, choose Next.
    - Setup Result: Errors window: If the setup of one or more components failed, the wizard opens this window. To continue, choose Next, and then in the Restoration window, do either of the following:
        - Select the failed component and proceed to start the restoration process.
        - Choose Next to skip the restoration.
14. In the Congratulations window, choose Finish to close the wizard.

3.3.1 Installing the Browser Access Service

To enable access to SAP Business One in a Web browser, you must install the browser access service on a server where the SAP Business One client is also installed. However, for security reason, we recommend that this client is not exposed to end users.

Compared with desktop access, browser access has certain limitations. For more information, see SAP Notes 2194215 and 2194233.

Prerequisites

If you want to use a certificate for the HTTPS connection, ensure the following:

- You have specified the fully qualified domain hostname (FQDN) as the network address of the SLD.

  If you did not, do either of the following:
  - If your current SAP Business One version is 10.0, reconfigure the SLD network address following the instructions in Reconfiguring the System.
  - If your current SAP Business One version is lower than 10.0, first upgrade your system to 10.0 and then reconfigure the SLD network address following the instructions in Reconfiguring the System.

    When running the setup wizard to upgrade the schemas and Windows-based components, do not choose to install the browser access service.
- The FQDNs of both the SLD server and the browser access server are covered by the certificate.

  If you used a self-signed certificate for the SLD, do either of the following:
  - If your current SAP Business One version is 10.0, change the certificate following the instructions in Reconfiguring the System.
  - If your current SAP Business One version is lower than 10.0, first upgrade your system to 10.0 and then change the certificate following the instructions in Reconfiguring the System.

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Procedure

1. Navigate to the root folder of the product package and run the setup.exe file.
2. In the welcome window, select your setup language and choose Next.
3. In the Setup Type window, select Perform Setup and choose Next.
4. In the Setup Configuration window, select New Configuration and choose Next.
5. In the System Landscape Directory window, do the following:
   1. Select Connect to Remote System Landscape Directory.

      Caution

      Select this option even if you are installing the Browser Access service on the SLD server.
   2. Enter the FQDN of the SLD server.
   3. Choose Next.
6. In the Site User Logon window, enter the password for the site super user `B1SiteUser`.

   This site user was created during the installation of the SLD.
7. In the Database Server Connection window, enter the database server information as follows:
   1. Specify the database server type as HANADB.
   2. From the Server Name field dropdown list, select your SAP HANA server instance.
   3. Choose Next.
8. In the Component Selections window, select the following components and choose Next:
   - Browser access service

   Note that the browser access service can be selected only if you have selected (or installed) SAP Business One client.
9. In the Parameters for Browser Access Service window, specify the following information for the browser access service:
   - Service URL: For the internal access URL of the service, specify:
     - The network address (hostname, IP address, or FQDN) of the machine
     - The port for the service (default: `8100`)
   - Security certificate: Import a valid PKCS12 certificate and enter the password, or select the Use Self-Signed Certificate radio button.

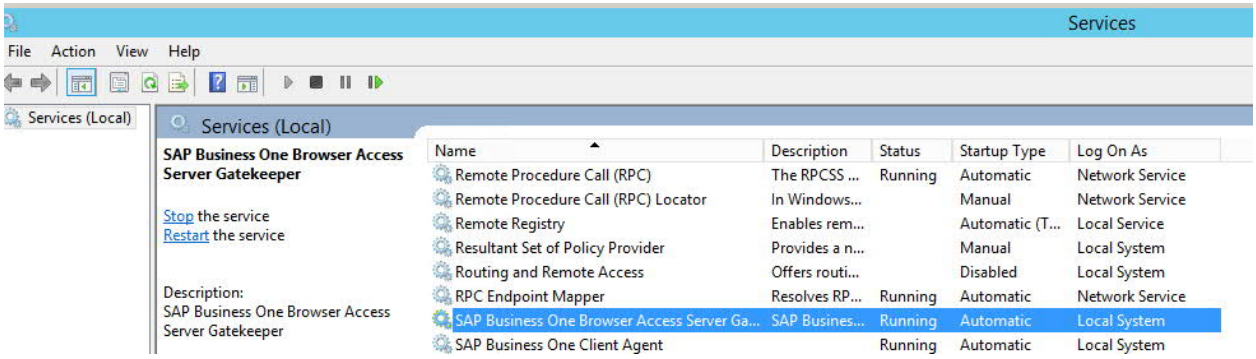
     Communication between the browser access gatekeeper and SAP Business One clients or DI API is encrypted using the HTTPS protocol, so a certificate is required for authentication. You can obtain a certificate using the following methods:
     - Third-party certificate authority – You can purchase certificates from a third-party global Certificate Authority that Microsoft Windows trusts by default. If you use this method, select the Specify PKCS12 Certificate Store and Password radio button and enter the required information.
     - Certificate authority server – You can configure a Certificate Authority (CA) server in the SAP Business One landscape to issue certificates. You must configure all servers in the landscape to trust the CA's root certificate. If you use this method, select the Specify PKCS12 Certificate Store and Password radio button and enter the required information.
     - [Not recommended] Generate a self-signed certificate – You can let the installer generate a self-signed certificate; however, your browser will display a certificate exception when you access SAP Business One in a Web browser, as the browser does not trust this certificate. To use this method, select the Use Self-Signed Certificate radio button.

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10. In the Review Settings window, review your settings and proceed as follows:
    - To continue, choose Next.
    - To change the settings, choose Back.
11. In the Setup Summary window, choose Next.
12. In the Setup Status window, wait for the system to perform the required actions.
13. In the Complete window, choose Finish.

Post-requisites

The Browser Access service is registered as a Windows service SAP Business One Browser Access Gatekeeper. After installation, check if this Windows service runs under the `Local System` account.



3.4 Installing Client Components

You can install the following client components on every workstation:

- SAP Business One client application (together with SAP Business One client agent and DI API)
- Software development kit (SDK)
- Data transfer workbench
- SAP Business One Studio
- Excel Report and Interactive Analysis

> **Note**
>
> SAP Business One client components can be installed also from the System Landscape Directory (SLD) control center. For more information, see Performing Centralized Deployment.

> **Note**
>
> If you want to install the SAP Business One client manually in silent mode, you can use the following command line parameters:
>
> ```
> Setup.exe /S /Z"<Full Installation Path>*<System Landscape Directory Address>:<Port>
> ```


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For example: **`setup.exe /S /z"c:\Program Files\SAP\SAP Business One Client\*127.0.0.1:30000"`**

If you want to use the Microsoft Outlook integration features on a workstation without the SAP Business One client application, install the Microsoft Outlook integration component (standalone version). For more information, see Installing the Microsoft Outlook Integration Component (Standalone Version).

Prerequisites

- The installation computer complies with all hardware and software requirements. For information on hardware and software requirements, search for relevant information on SAP Help Portal.
- You have installed the 64-bit SAP HANA database client for Windows.
- You have installed Microsoft Windows 10 on the machine where the SAP Business One client is installed.
- If you want to use Excel Report and Interactive Analysis, ensure that you have installed the following:
  - Microsoft Excel 2010, 2013 or 2016
  - Microsoft .Net Framework 4.5.2 or the higher version in CLR 4.

    If it is not installed yet, you can install it during the installation process. However, a restart may be required.
  - Microsoft Visual Studio 2010 Tools for Office Runtime
  - 64-bit Microsoft Excel
  - Client of SAP HANA Enterprise Edition 2.0 SPS 03 Rev.036 on the Windows machine.

    Note

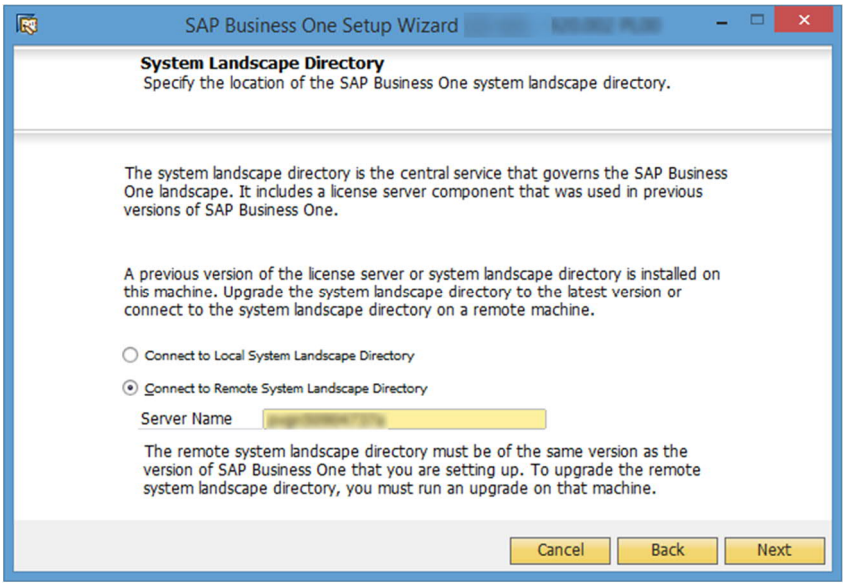
    If you have installed the higher revision of SAP HANA client (for example, revision 045) on the Windows machine, you need to first uninstall the client and then install the client revision 036. For more information, see SAP Note 2829521.
- If the machines on which the SAP Business One client and DI API run use an HTTP proxy for network access, you have added the System Landscape Directory server to the list of proxy exceptions.

Procedure

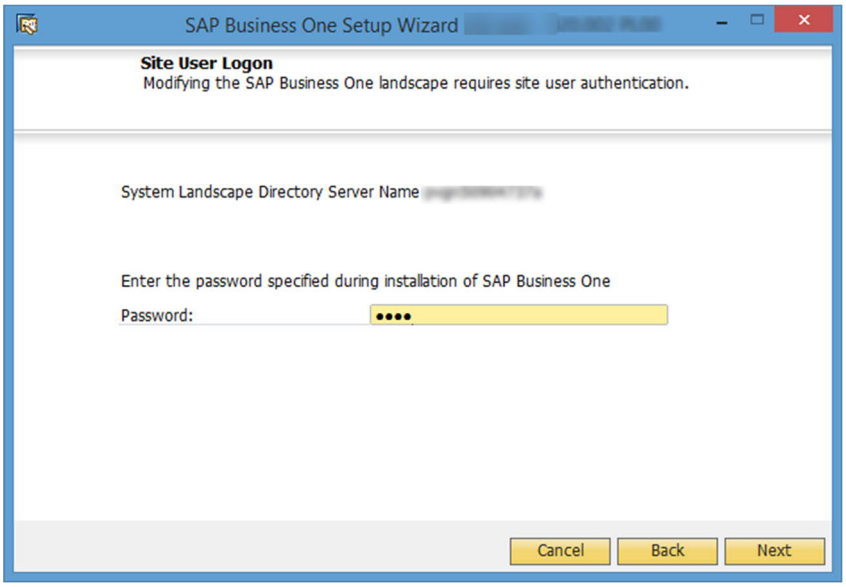
A setup wizard is used for installation as well as for upgrade. The following procedure describes how to install all client components (except for Excel Report and Interactive Analysis) in a clean environment where no SAP Business One components exist.

1. Navigate to the root folder of the product package and run the setup.exe file.
2. In the welcome window, select your setup language and choose Next.
3. In the Setup Type window, select Perform Setup and choose Next.
4. In the Setup Configuration window, select New Configuration and choose Next.
5. In the System Landscape Directory window, do the following:
   1. Select Connect to Remote System Landscape Directory.
   2. Specify the hostname or the IP address of the server where the SLD is installed.
   3. Choose Next.

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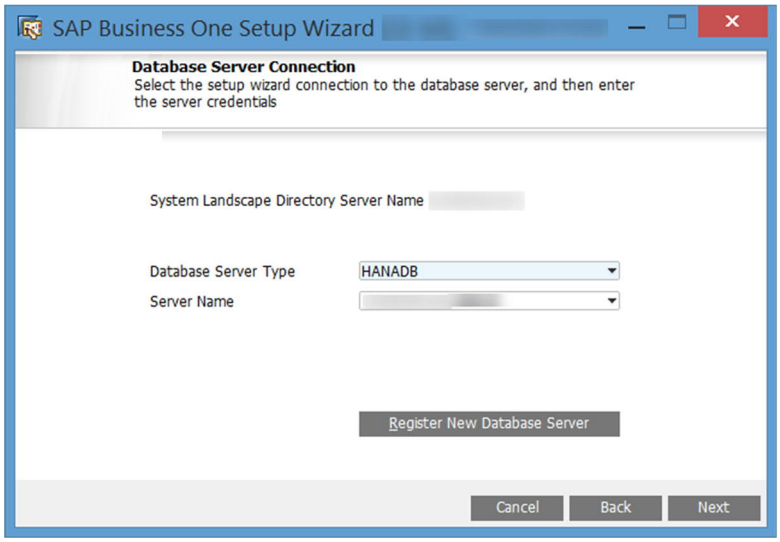


6. In the Site User Logon window, enter the password for the site super user `B1SiteUser`.
   This site user was created during the installation of the SLD.



7. In the Database Server Connection window, enter the database server information as follows:
   1. Specify the database server type.
   2. In the Server Name field, enter the hostname or the IP address of the database server.
   3. Choose Next.

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8. In the Component Selections window, select the required client components and choose Next.
9. In the Review Settings window, review the settings you have made and choose Next.
10. In the Setup Summary window, review the component list and choose Setup to start the setup process.
11. In the Setup in Process window, wait for the setup to finish.

    In the course of the setup, some additional wizards are displayed to guide you through the setup of corresponding components.
12. Depending on the results of the setup, one of the following windows is displayed:
    - Setup Result: Successful window: If the setup of all components was successful, the wizard opens this window. To continue, choose Next.
    - Setup Result: Errors window: If the setup of one or more components failed, the wizard opens this window. To continue, choose Next, and then in the Restoration window, do either of the following:
      - Select the failed component and proceed to start the restoration process.
      - Choose Next to skip the restoration.
13. In the Congratulations window, choose Finish to close the wizard.

Post-requisites for Excel Report and Interactive Analysis

To use Excel Report and Interactive Analysis, you must do the following after the installation:

- In Microsoft Excel, enable all macros and select to trust access to the VBA project object model.

  For instructions, see the Microsoft online help.
- If the user who installs Excel Report and Interactive Analysis (user A) is different from the user who uses Excel Report and Interactive Analysis (user B), user B must start Excel Report and Interactive Analysis from the Windows menu for the first time. After having done so, user B can start Excel Report and Interactive Analysis directly from within the SAP Business One client or from the Windows menu.
- If you have installed Excel Report and Interactive Analysis to a folder that is not in the `%ProgramFiles%` directory (default installation folder), you must perform some additional steps before using the function. For instructions, see the section "Cannot Use Excel Report and Interactive Analysis" in Troubleshooting.

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3.5 Installing the Microsoft Outlook Integration Component (Standalone Version)

The Microsoft Outlook integration component enables you to exchange and share data between SAP Business One, version for SAP HANA and Microsoft Outlook. This component is a standalone version that does not require the SAP Business One client to be installed on the same computer.

If you want to use the Outlook integration features on a computer on which you have installed the SAP Business One version for SAP HANA client, you can install either the Outlook integration add-on or the standalone version. For more information, see Assigning SAP Business One Add-Ons, version for SAP HANA.

> **Caution**
>
> The Microsoft Outlook integration component is a standalone version of the Outlook integration add-on and they cannot coexist.
>
> If you install the add-on while you have the standalone version installed on the same computer, a subsequent upgrade of the standalone version will be prevented; if you install the standalone version while you have the add-on installed on the same computer, the installation fails.

> **Note**
>
> Only the 64-bit version of the Microsoft Outlook integration component is available.

Prerequisites

- You have installed the 64-bit SAP Business One DI API.
- You have installed the 64-bit Microsoft Outlook.
- You have assigned the following to the SAP Business One user account which is used for the connection:
  - The Microsoft Outlook integration add-on in the SAP Business One client
  - The SAP AddOns license
- You have started the Microsoft Outlook integration add-on in the company at least once. This ensures that the necessary user-defined tables are added to the company database.

Procedure

1. Navigate to the root folder of the product package and run the setup.exe file.
2. In the welcome window, select your setup language and choose Next.
3. In the Setup Type window, select Perform Setup and choose Next.
4. In the Setup Configuration window, select New Configuration and choose Next.
5. In the System Landscape Directory window, do the following:
   1. Select Connect to Remote System Landscape Directory.
   2. Enter the hostname or the IP address of the SLD server.
   3. Choose Next.
6. In the Site User Logon window, enter the password for the site super user `B1SiteUser`.

   This site user was created during the installation of the SLD.

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7. In the Database Server Connection window, enter the database server information as follows:
    1. Specify the database server type.
    2. In the Server Name field, enter the hostname or the IP address of the database server.
    3. Choose Next.
8. In the Component Selections window, select the Outlook Integration Standalone and choose Next.
9. In the Review Settings window, review your settings and proceed as follows:
    - To continue, choose Next.
    - To change the settings, choose Back.
10. In the Setup Summary window, choose Next.
11. In the Setup Status window, wait for the system to perform the required actions.
12. In the Complete window, choose Finish.

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4 Installing SAP Crystal Reports, version for the SAP Business One application

SAP Crystal Reports, version for the SAP Business One application provides integration with SAP Business One. You can use this software to create, view and manage report and document print layouts, using SAP Business One data sources.

Different versions of SAP Business One, version for SAP HANA support their corresponding SAP Crystal Reports (CR) runtime in addition to different versions of CR for SAP Business One. To make sure that there are no shutdowns or other inconsistency issues, always check your environment and verify that the supported version of CR for SAP Business One is in use. For more information about SAP Crystal Reports for SAP Business One, version for SAP HANA, see SAP Note 2329487 and 2584094.

As of release 10.0 PL02, SAP Business One, version for SAP HANA supports SAP Crystal Reports 2016 SP7, version for the SAP Business One application.

To use SAP Crystal Reports, version for the SAP Business One application, perform the following operations:

1. Install SAP Crystal Reports 2016 SP7, version for the SAP Business One application.
2. Run the SAP Crystal Reports integration script. This step ensures that SAP Business One data sources are available in the application.

   Note

   To use SAP Crystal Reports, version for the SAP Business One application, you must install Microsoft .NET Framework 3.5 and 4.5 on the server as well as on the client workstations.

For more information about SAP Crystal Reports, version for the SAP Business One application, see How to Work with SAP Crystal Reports in SAP Business One on SAP Help Portal.

For more information about how to connect to the data sources of SAP Business One, version for SAP HANA, see How to Set Up SAP Business One, version for SAP HANA Data Sources for Crystal Reports in the documentation area of SAP Help Portal.

4.1 Installing SAP Crystal Reports, version for the SAP Business One application

Prerequisites

- You have downloaded the installation package of SAP Crystal Reports, version for the SAP Business One application from the SAP Business One Software Download Center on SAP Support Portal at https://support.sap.com/b1software.
- The operating system of the computer on which you want to install SAP Crystal Reports for SAP Business One is Windows 7 SP1 or higher.
- If you already have SAP Crystal Reports installed on your computer, uninstall this software.

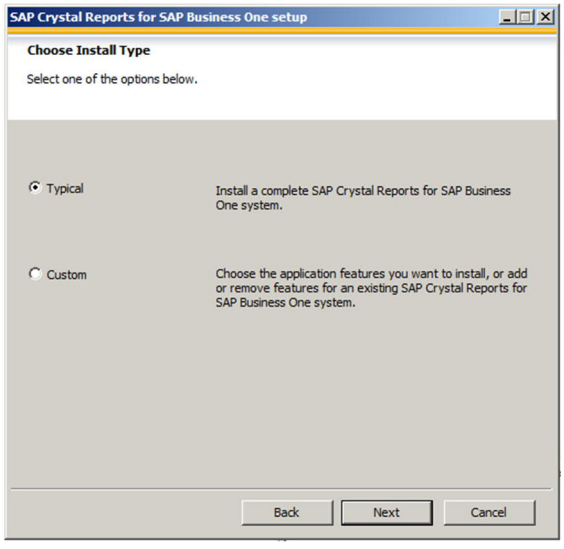
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You will also be prompted to uninstall it during the installation procedure.

Procedure

1. Navigate to the root folder of the product package and run the `setup.exe` file.
2. In the SAP Crystal Reports for SAP Business One setup window, select a setup language and choose OK.
3. The Prerequisites check window appears. If you have fulfilled all critical prerequisites, you can continue with the installation; otherwise, follow the instructions in the wizard to resolve any issues before proceeding.
4. In the welcome window, choose Next.
5. In the License Agreement window, read the software license agreement, select the radio button I accept the License Agreement, and then choose Next.
6. In the Specify the Destination Folder window, specify a folder where you want to install the software.
7. In the Choose Language Packs window, select the checkboxes of the languages you want to install and choose Next.
8. In the Choose Install Type window, select one of the following installation types and choose Next:
   - Typical: Installs all application features. For a typical installation, proceed to step 9.
   - Custom: Allows you to do the following:
     - Select features that you want to install.

       If you have installed SAP Crystal Reports, version for the SAP Business One application, you can select the Custom install type to add or remove features.
     - Select whether or not you want to receive the web update service
     - Check the disk cost of the installation



Note

If you have done one of the following, the Browse button is inactive because a destination folder already exists:

- You have already installed SAP Business One; that is, before installing SAP Crystal Reports, version for the SAP Business One application.

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- You have already installed the SAP Crystal Reports viewer. For example, this may be installed automatically when you install the SAP Business One client.

9. In the Select Features window, select the features you would like to install and choose Next.

   The icons in the feature tree indicate whether the feature and its sub-features will be installed, as follows:

   - A white icon means that the feature and all its sub-features will be installed.
   - A shaded icon means that the feature and some of its sub-features will be installed.
   - A yellow 1 means that the feature will be installed when required (installed on demand).
   - A red X means that the feature or sub-feature is either unavailable or will not be installed.

   SAP Crystal Reports, version for the SAP Business One application uses an "install on-demand" technology for some of its features. As a result, the first time a particular feature is used after being installed, there may be an extra wait for the "install on-demand" to complete. This behavior will affect new installations only once and will not occur when features are restarted.

   To check how much disk space is required for the installation of selected features, choose Disk Cost.

10. In the Web Update Service Option window, you can disable the web update service by selecting the Disable Web Update Service checkbox. We recommend, however, that you enable the update service to stay aware of updates that can help you enhance your SAP Crystal Reports.

    Choose Next to proceed.

11. In the Start Installation window, choose Next.

    The Crystal Reports for SAP Business One Setup window appears.

12. When the installation is complete, the Success window appears. To exit the installation wizard, choose Finish.

Next Steps

Ensure that you also have the 32-bit DI API Legacy Package installed on your workstation; otherwise, you cannot connect to SAP Business One data sources or use the Add-ins menu to connect to SAP Business One.

4.2 Running the Integration Package Script

To make the SAP Business One data sources and the Add-ins menu available in the SAP Crystal Reports designer, run the SAP Business One Crystal Reports integration script. The SAP Business One tables are organized according to the modules in the SAP Business One Main Menu.

Procedure

1. In the SAP Business One product or upgrade package, locate the …`Packages.x64\SAP CRAddin Installation` folder and double-click the `SAP Business One Crystal Report Integration Package.exe` file.
2. After the installation finishes, choose Finish to exit the wizard.

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4.3 Updates and Patches for SAP Crystal Reports, version for the SAP Business One application



Caution

Since you are using SAP Business One, version for SAP HANA together with an Original Equipment Manufacturer (OEM) version of SAP Crystal Reports, do not apply standard SAP Crystal Reports file or product updates (including Hot Fixes and Service Packs) as they are not designed to work with OEM versions of SAP Crystal Reports.

File or product updates are provided in the following ways:

- Integrated runtime version: distributed together with SAP Business One, version for SAP HANA
- Designer: provided separately via a dedicated folder location in the SAP Business One Software Download Center on SAP Support Portal at https://support.sap.com/b1software.

If you are using both the integrated runtime version and the designer, make sure that they are either on the same patch or Service Pack level or that the Report Designer is on an earlier patch or Service Pack level than the Runtime version. If not, inconsistencies may occur.

To find out if you are using an OEM version of SAP Crystal Reports, start the designer and look for either of these two indicators:

- The title bar of the designer indicates SAP Crystal Reports for a certain product (such as SAP Crystal Reports for SAP Business One).
- In the Help menu, choose About (for example, About Crystal Reports). The technical support phone number in the About Crystal Reports box is not listed as (604) 669 8379.

If either of these indicators exists in your product, you are using an OEM version of SAP Crystal Reports.

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5 Uninstalling SAP Business One, version for SAP HANA

When you uninstall SAP Business One, version for SAP HANA, you remove the application and its components.

Procedure

1. Remove the add-ons:
    1. From the SAP Business One Main Menu, choose Administration → Add-Ons → Add-On Administration.

       The Add-On Administration window appears.
    2. On the Company Preferences tab, under Company Assigned Add-Ons, select the add-ons.
    3. Choose the arrow button between the two panels.
    4. In the Available Add-Ons list, select the add-ons.
    5. Choose Remove Add-On, and then choose the Update.

       > **Note**
       >
       > You can move XL Reporter to the Available Add-Ons panel but you cannot remove XL Reporter in the Add-On Administration window. The Remove Add-On button is disabled for XL Reporter.
    6. Log on again to SAP Business One. SAP Business One automatically uninstalls SAP Business One add-ons that you have removed. This is applicable to all companies on the same server.

       Note that for third-party add-ons, you may need to uninstall them from the Windows Control Panel.
2. On the Linux server machine, uninstall the server components (server tools, SAP Business One server, SAP Business One analytics powered by SAP HANA, and so on) as follows:
    1. Navigate to the installation folder for the SAP Business One server components (default path: `/usr/sap/SAPBusinessOne`).
    2. Start the uninstaller from the command line by entering one of the following commands, depending on the uninstallation mode:
        - Wizard uninstallation: Enter **`./setup`**, select Uninstallation, and then follow the steps in the wizard to uninstall the components.
        - Silent uninstallation: Enter **`./setup -u silent -f <Property File Path>`**. For more information about supported arguments and parameters, see Silent Installation.

       > **Note**
       >
       > By default, the shared folder is not deleted during the uninstallation process. In you intend to delete the shared folder, you must choose the Delete Shared Folder checkbox in the Share Folders for SAP B1 Landscape window during the uninstallation.
3. To uninstall the SBO DI server and Workflow, on your Windows server, in the Programs and Features window (Control Panel →Programs → Programs and Features), select SAP Business One Server Tools and choose Uninstall.

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4. To uninstall the SLD Agent, on your Windows machines, in the Programs and Features window (Control Panel → Programs → Programs and Features), select SAP Business One Components Wizard and choose Uninstall.

   Alternatively, you can uninstall the SLD Agent by running the `setup.exe` file in the path `C:\Program Files (x86)\SAP\SAP Business One SetupFiles\setup.exe`.
5. On each of your workstations, in the Programs and Features window (Control Panel →Programs → Programs and Features), select the following items one at a time and choose Uninstall after each selection:
   - SAP Business One Client
   - Data Transfer Workbench
   - SAP Business One SDK
   - SAP Business One Studio
   - SAP Business One Excel Report and Interactive Analysis
   - SAP Business One Components Wizard
6. To remove the DI API:
   - If you installed the DI API as part of the client installation of SAP Business One, version for SAP HANA, the system automatically removes the DI API when you uninstall the SAP Business One, version for SAP HANA client.
   - If you installed the DI API using the manual setup program in the `b1_shf/B1DIAPI` folder, you must remove it by choosing Control Panel → Programs → Programs and Features and selecting SAP Business One DI API.

Results

The analytics schema `COMMON` has been removed from the SAP HANA database server as well as all customized analytical contents and settings. The database user `COMMON` reserved for analytics features has also been deleted.

You can now do the following:

- Manually delete the SAP Business One folders on Linux and Windows.

  Note

  Exports of company schemas are not removed during the uninstallation process. We highly recommend that you keep at least one export for each company schema.
- If you chose not to remove any of the following schemas during the uninstallation process, remove (drop) the schema from the SAP HANA database:
  - SLD schema
  - `SBOCOMMON` schema

  Note

  Each of the above schemas is available for removal only if the corresponding feature is selected for uninstallation. For example, if you do not uninstall the System Landscape Directory, the SLD schema does not appear for selection in the GUI mode; in the silent mode, even if you specify for the SLD schema to be removed in the property file, the command is ignored.
- Remove (drop) your company schemas from the SAP HANA database.

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Caution

Before dropping any productive schemas, ensure that you have backed up the entire SAP HANA database instance.

SAP Business One, version for SAP HANA entries no longer appear in the Windows Programs menu and all shortcuts on the Microsoft Windows desktop are removed.

5.1 Uninstalling the SAP Business One Client Agent

The SAP Business One client agent is automatically uninstalled when you uninstall SAP Business One client. However, if the client agent cannot be uninstalled successfully, you can also uninstall it manually.

To uninstall the SAP Business One client agent, version for SAP HANA, in the Programs and Features window (Control Panel →Programs → Programs and Features), select SAP Business One Client Agent and choose Uninstall.

5.2 Uninstalling the Integration Framework

To uninstall the integration framework, use the Change SAP Business One Integration program. With this program you can add or remove features, repair the installation or uninstall the integration framework.

Prerequisites

- To disable further event creation for the company schemas in SAP Business One, run the event sender setup and in step 4, deselect the company schemas.
- You have administrative rights on the PC where you uninstall the integration framework.
- You have made a backup of the database of the integration framework.
- You have made a backup of the B1iXcellerator folder.

  To find the folder, select IntegrationServer → Tomcat → webapps → B1iXcellerator.

Procedure

1. Choose Start → All programs → Integration solution for SAP Business One → Change SAP Business One Integration.

   The SAP Business One Integration Wizard Introduction window opens.
2. In the Maintenance Mode window select Uninstall Product and choose Next.

   The system notifies you that it uninstalls the integration framework.
3. Choose Uninstall.

   The system uninstalls your installation.
4. To finish the procedure, choose Done.

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Result

The program uninstalls the integration framework, but it does not remove the database (or schema). Remove it separately.

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6 Upgrading SAP Business One, version for SAP HANA

To upgrade your SAP Business One application to a new minor or major release and run it successfully, you must do the following:

1. Upgrade your SAP Business One successfully.
2. Import the license file for the new release.

If you are using the intercompany integration solution for SAP Business One, make sure the intercompany version is compatible with this SAP Business One patch level as specified in SAP note 1844555. You may need to upgrade the intercompany version as well.

> **Note**
>
> If your SAP Business One is of a hotfix version, we strongly recommend that you upgrade to the next regular patch once it is available, as hotfixes are intended only as temporary solutions.
>
> To upgrade to a new minor or major release, you must upgrade to a regular patch first, and then you can proceed with the upgrade to the new release.

6.1 Supported Releases

The following major or minor releases are currently supported for upgrade to SAP Business One 10.0 FP 2102, version for SAP HANA:

- SAP Business One 9.2 PL00-PL11, version for SAP HANA
- SAP Business One 9.3 PL00-PL14, version for SAP HANA
- SAP Business One 10.0 PL00-FP 2011, version for SAP HANA

> **Note**
>
> If your SAP Business One version is lower than 9.2 PL00, the direct upgrade to 10.0 is not supported. You must first upgrade your system to SAP Business One 9.3, version for SAP HANA and then upgrade to 10.0.

For more information about upgrading from specific patches of supported releases, see the Readme or Patch Readme file for the respective SAP Business One version.

6.2 Upgrade Process

To upgrade SAP Business One to release 10.0, version for HANA, you must do the following:

1. To determine the upgrade path, read the Overview Note for the required version.

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For example, check which versions are supported for upgrade to the required higher version. If direct upgrade is not supported, you need to upgrade your system first to a supported version and perform the server upgrade operation more than once.

> **Caution**
>
> You must disable the automatic restart settings for database server and SAP Business One server components before starting the upgrade process.

2. On your Linux server, upgrade your operating system to the required version. For more information, see Host Machine Prerequisites.
3. On your Linux server, upgrade SAP HANA to the required version and upgrade the following:
   - AFLs on the SAP HANA server system

     > **Note**
     >
     > You must upgrade the AFLs together with SAP HANA server.

   - SAP HANA Platform Edition

   For more information, see SAP Note 2001393 and 2372809 and the corresponding documentation on SAP Help Portal at https://help.sap.com/hana_platform.
4. On your Linux server, upgrade the server components. For more information, see Upgrading Server Components.

   > **Note**
   >
   > If some components are not installed, you can select to install them during the upgrade process.

5. On a Windows machine, upgrade your company schemas and other components. For more information, see Upgrading SAP Business One Schemas and Other Components.

   > **Note**
   >
   > On your Windows server machine, if you need to upgrade SAP Business One SLD Agent, you must upgrade it separately using the Components Setup Wizard. For more information, see Manually Installing SLD Agent Service.

6. If needed, update analytical contents for your companies in the Administration Console. For more information, see Initializing and Updating Company Schemas.
7. On each workstation, do the following:
   - If you have installed such client components as the DTW, run the setup wizard to upgrade these client components. For more information, see Upgrading SAP Business One Schemas and Other Components.
   - Upgrade the SAP Business One client. For more information, see Upgrading the SAP Business One Client.
   - Upgrade the SAP HANA database client
   - Upgrade the SAP Business One SLD Agent. For more information, see Manually Installing SLD Agent Service.

6.3 Upgrading Server Components

Before upgrading your company schemas, including the `SBOCOMMON` schema and the company schemas, you must upgrade the server components.

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You can perform the upgrade in both GUI and silent modes. Silent upgrade shares the same process and parameters used for the silent installation; for more information, see Silent Installation. The following procedure describes how to upgrade server components in GUI mode.

> **Note**
>
> If you have installed the Service Layer, the components of this application will also be upgraded.

Prerequisite

- You have the password of the Linux `root` user account.
- You have extracted or copied the following folders from the product package to the Linux server:
  - Packages.Linux
  - Prerequisites
  - Packages.64 / Server
  - Packages.64 / Client
  - Packages.64 / DI API Legacy Package
  - Packages.64 / ComponentsWizard
  - Packages.x64 / DI API
  - Packages.64 / SAP CRAddin Installation
  - Packages.64 / Server / ExclDocs

  Note that you must keep the original CD structure, with these folders in a separate parent folder.

  If you have enough disk space, you can extract or copy the entire package to the Linux server.
- The SAP system (sapsys) group ID must remain the default value 79 for the local SAP HANA server (if one exists) and for all SAP HANA servers that require to be backed up using the backup service.

  Make sure that the local SAP HANA database server and all of the remote SAP HANA database servers that require to be backed up using the backup service share this SAP system group ID value.

Procedure

1. Log on to the Linux server as `root`.
2. In a command-line terminal, navigate to the directory …`/Packages.Linux/ServerComponents` where the `install` script is located.
3. Start the setup program from the command line by entering the following command: **`./install`**

   > **Note**
   >
   > If you receive an error message: "Permission denied", you must set execution permission on the installer script to make it executable. To do so, run the following command: **`chmod +x install.`**

   The setup process begins.
4. In the welcome page of the setup wizard, choose Next.
5. In the Select Features window, select the features that you want to upgrade and choose Next.

   If there are no installed versions of a feature, you can select the feature to install it.
6. In the Site User Password window, enter the password for the site super user `B1SiteUser` and choose Next.

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If the password has not changed since the last installation or upgrade, choose Next without re-entering the password.

7. If you have not enabled remote administration, in the Shared Folders for System Landscape Directory window, you can choose to create shared folders for a default CD repository and a central log directory.
8. In the Database Server Connection window, specify the Tenant Database and enter the password for the database user; choose Next.

   Caution

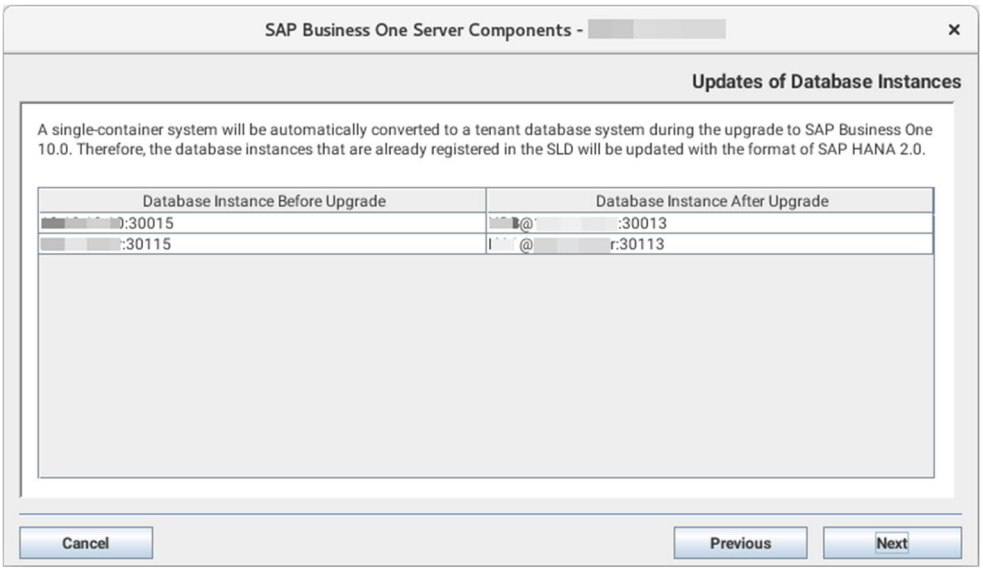
   Make sure the tenant database name starts with an uppercase letter and contains only the following characters:

   - Upper case
   - Alphanumeric
   - Underscore symbols (_)
   - If you use the lower case, each small letter is automatically converted to upper case.
   - Make sure the tenant database name is not `SYSTEMDB`.

   If the password has not changed since the last installation or upgrade, choose Next without re-entering the password.
9. In the Updates of Database Instances window, you can see the database instances that have already been registered in the SLD are updated with the format of SAP HANA 2.0

   Example

   The database instance `<IP address>:30015` will be automatically converted to `HDB@<IP address>:30013`. `HDB` is the tenant database; `<IP address>` is the SAP HANA Server; `30013` is the port of SAP HANA system database.



10. In the Backup Service Settings window, you can change the backup service settings.

    Note that if you have been keeping the log file folder and the backup folder in the same parent directory, you must change either folder; it is likewise for the log file folder and working folder. For example, you cannot specify **`/backup/logs`** for the log file folder while specifying **`/backup/backups`** for the backup folder.

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Choose Next to continue.

11. If you have installed the app framework on this machine, in the Restart Database Server window, choose whether or not to restart the SAP HANA serve after the upgrade. Choose Next.
12. In the Share Folders for SAP B1 Server window, choose whether or not to turn on accessibility check for shared folders.
13. In the next Share Folders for SAP B1 Server window, you can see the paths of the shared folder and those of the log folder. If you have chosen the accessibility check in the previous window, you can see the accessibility for each path.
14. If you have not enabled AutoStart for the Samba service, you can choose whether to do so or not in the Samba Service Settings.
15. If you have not enabled single sign-on, you can choose whether to do so or not in the Windows Domain User Authentication (Single Sign-On) window. For detailed instructions, see Installing Linux-Based Server Components.

    Choose Next to continue.
16. In the Review Settings window, first review your settings and then choose Install.

    If you want to save the current settings to a property file for a future silent installation, choose Save Settings. For more information, see Silent Installation.

    
    Caution

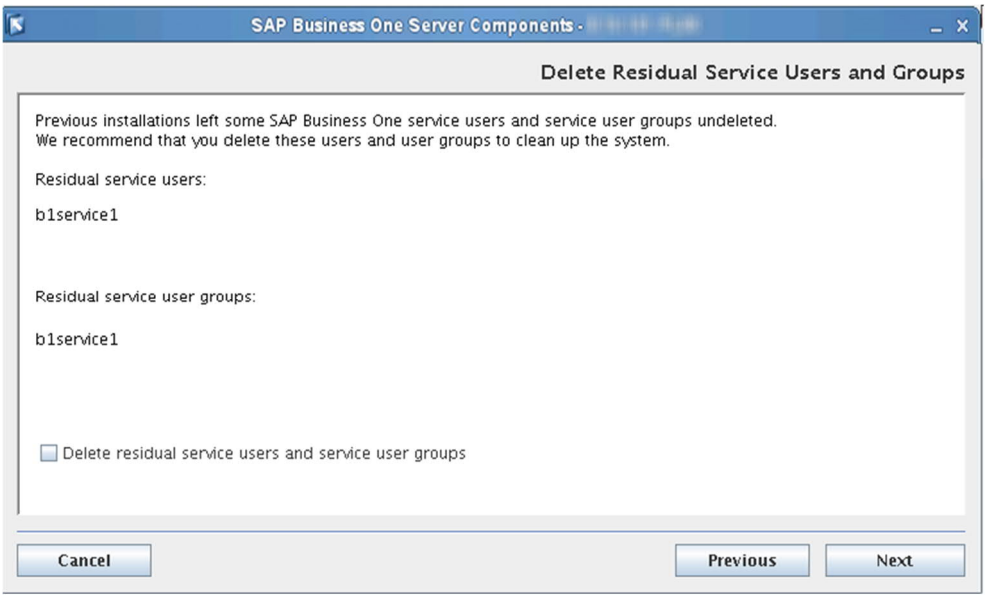
    The property file generated in this way does not contain the parameter `FEATURE_DATABASE_TO_REMOVE`, which is required by silent uninstallation. You must manually add the parameter to the property file before performing silent uninstallation.

    Passwords will also be saved in the property file. We recommend that you delete the passwords from the saved property file and fill in passwords before you perform silent installation next time.

    The upgrade process begins.
17. If your current installation has been running under a `b1serviceX` user (where `X` represents any integer larger than 0) instead of a `b1service0` user, a Delete Residual Service Users and Groups window is displayed. `B1serviceX` users and user groups are usually remnants of previously failed uninstallations or rollbacks.

    Although not mandatory, we recommend that you delete these users and user groups to prevent potential unnecessary future complications. To do so, select the Delete residual service users and service user groups checkbox and choose Next.

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18. In the Setup Progress window, when the progress bar displays 100%, do one of the following:
    - If all components were upgraded successfully, choose Next.
    - If a component failed to be upgraded, choose Roll Back to restore the system. After rollback is complete, in the Rollback Progress window, choose Next.
19. In the Setup Process Completed window, review the upgrade result and choose Finish. (If you chose to configure SSL for the app framework, an additional window appears, reminding you to restart the SAP HANA server).

Results

Database Role PAL_ROLE

A database role PAL_ROLE is created during the upgrade/installation process of the app framework. All database privileges necessary for using pervasive analytics are assigned to this role.

If you encounter any problems using pervasive analytics after the installation/upgrade, refer to Database Role PAL_ROLE for Pervasive Analytics.

Service User

An operating system user `b1techuser` is created and used to move log files from client machines to a central log folder in the shared folder `b1_shf`. You may change the user in the SLD by editing the server information. The user must be either a local user or a domain user that has write permissions to the central log folder.

Security Certificate for the App Framework

If you want to use a security certificate issued by a certificate authority for the app framework, rather than using a self-signed certificate, you must create a certificate request and import the signed certificate by yourself. For detailed instructions, see the "Configuring HTTPS (SSL) for Client Application Access" chapter in the SAP HANA Administration Guide at http://help.sap.com/hana_platform.

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Post-requisites

1. In the license control center, import the license file for the new release. For more information, see License Control Center.
2. Upgrade `SBOCOMMON` and your company schemas.

6.4 Upgrading SAP Business One Schemas and Other Components

You must use the SAP Business One setup wizard to upgrade the SAP Business One common database (`SBOCOMMON`) and your company schemas. If any of the upgrade steps fail, you can use the restoration mechanism to reverse all changes made by the wizard.

> **Note**
>
> For security reasons, we recommend that you run the SAP Business One setup wizard to upgrade your company schemas on a backend server which is well protected.

For company schemas migrated from the Microsoft SQL Server, upgrade is an integral part of the entire migration process. For more information, see Migrating from Microsoft SQL Server to SAP HANA.

If you intend to install the browser access service during the upgrade process, first read the instructions in Installing the Browser Access Service.

> **Recommendation**
>
> Before initiating company schemas upgrades, we recommend that you use the change logs cleanup utility to delete the change log entries and master data that are not needed anymore. This may help free up the space within your company schemas and reduce the upgrading time. For more information about change logs cleanup, see the online help of SAP Business One.

Prerequisites

- You have ensured that all SAP Business One, version for SAP HANA clients are closed.

  > **Recommendation**
  >
  > - Complete or terminate all workflow instances before closing SAP Business One client.
  > - Lock the company whose database you will upgrade from the SLD control center. For more information, see Upgrading Databases.

- You have backed up the entire SAP HANA instance recently (at least within the last day).

  > **Note**
  >
  > If the upgrade fails, recover the entire instance.

- On your SAP HANA server, you have started the Samba component.

  For more information, see the section “Starting Samba to Access and Upgrade the Shared folder” in Troubleshooting.

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- The database user registered for server connection is an admin user. To confirm this, do the following:
  1. To find out which database user is registered, in the System Landscape Directory, on the Servers and Companies tab, in the Servers section, choose Edit.

     The Edit Server window displays the registered database user.
  2. In the SAP HANA studio, check if the registered database user is an admin user.
  3. If the registered database user is not an admin user, either change the database user to an admin user or assign the appropriate privileges to the currently registered user.
- If you have installed the integration framework of SAP Business One, version for SAP HANA, you have ensured that the following services have been stopped (in the order given below):
  1. SAP Business One integration Event Sender
  2. SAP Business One integration DI Proxy Monitor
  3. SAP Business One integration DI Proxy
  4. Integration Server Service

     > **Note**
     >
     > After you have completed the upgrade process, you must restart the services in reverse order.

     > **Note**
     >
     > To only upgrade the integration framework, run the `setup.exe` file under `\Packages.x64\B1 Integration Component\Technology\` in the product package.
- On the computer on which you want to run the setup wizard, the following requirements have been met:
  - You have downloaded the product package. For more information, see Downloading Software.
  - You have administrator rights.
  - You have installed Microsoft .NET Framework 4.5.2 or the higher version in CLR4.
  - You have installed the 64-bit version of SAP HANA database clients for Windows.
  - The SAP HANA studio application is closed, if there is one.
  - You have added the System Landscape Directory server to the list of proxy exceptions.
  - The memory is no less than 4 GB.

Procedure

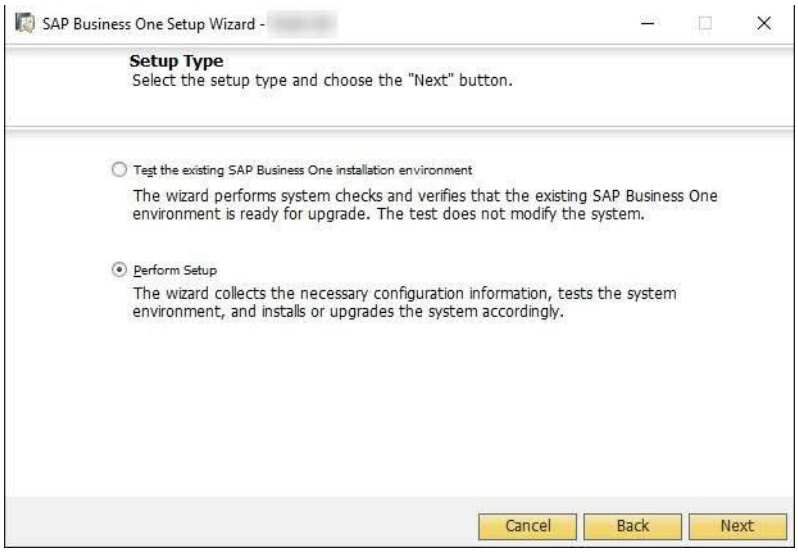
A setup wizard is used for installation as well as for upgrade. The following procedure describes how to upgrade the common database, the company schemas, Windows-based server components, and client components.

Note that the setup wizard does not support remote upgrade and can upgrade only local components. To upgrade components on other machines, you must run the setup wizard repetitively.

In addition, for upgrade of the SAP Business One client within a release family, you can perform silent upgrade instead of using the setup wizard. For more information, see Upgrading the SAP Business One Client.

1. Navigate to the root folder of the product setup package and run the setup.exe file.
2. In the welcome window, select your setup language, and choose Next.
3. In the Setup Type window, select the Perform Setup checkbox, and choose Next.

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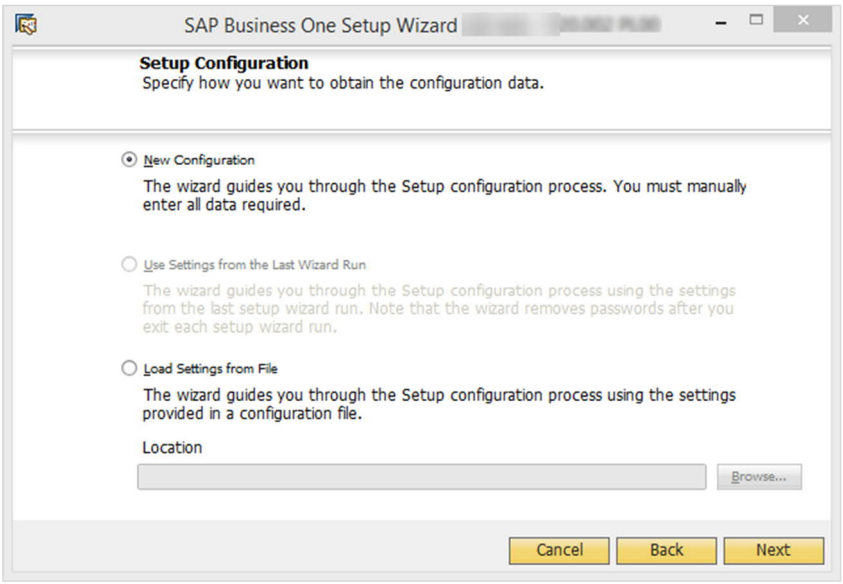
The option Test the existing SAP Business One installation environment verifies if the existing SAP Business One environment is ready for an upgrade. The existing installation and data are not changed. For each company schema that passes the test, you can generate a passcode, which allows you to bypass the pre-upgrade test when upgrading the schema later. The passcode is in the form of an XML file that contains details on the tested company schemas. It is valid for three days, and any changes to the company configuration render the passcode invalid.

The Perform Setup option performs both the pre-upgrade tests and upgrades selected components and schemas. If you carried out a pre-upgrade test for a company schema earlier, you can enter the passcode to bypass the pre-upgrade tests for this company schema.

4. In the Setup Configuration window, select one of the following options and choose Next:
   - New Configuration: Select this radio button to manually enter all the required settings.
   - Use Settings from the Last Wizard Run – Select this radio button to use the settings from the last wizard run, which are stored in the configuration file generated during that run.
   - Load Settings from File – Select this radio button to use the settings stored in a configuration file generated during a previous wizard run, and then specify the location of the file you want to use.

     To obtain the required `Config.XML` file, first run the setup wizard and select the New Configuration option. After generating this file, you can make a copy and use a text editor to modify the values for future use, as required.

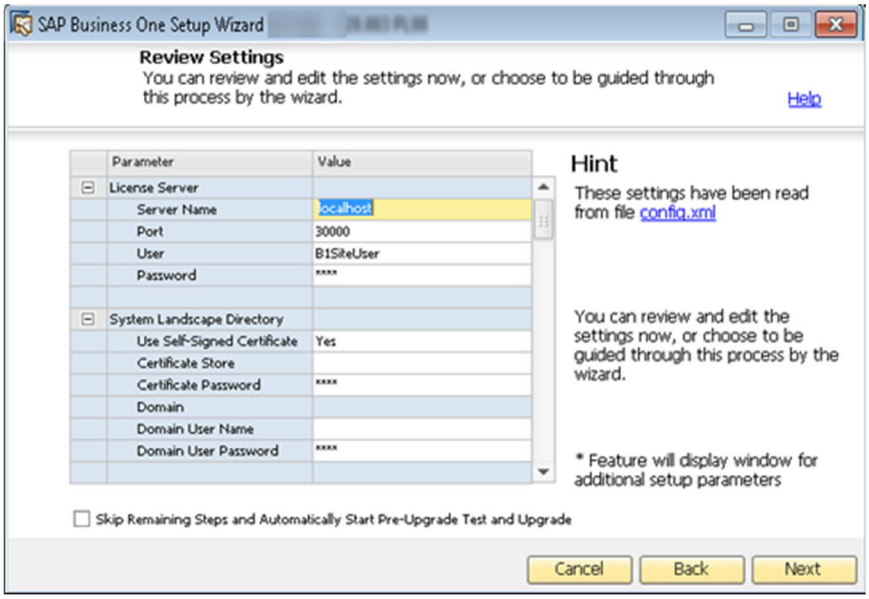
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5. If you selected to use the settings from the previous wizard run or a file, the Review Settings window appears.

   This window provides an overview of the settings that you have configured for the upgrade process. To modify any of the settings, edit the values in the table. Otherwise, choose Next to proceed with the upgrade.

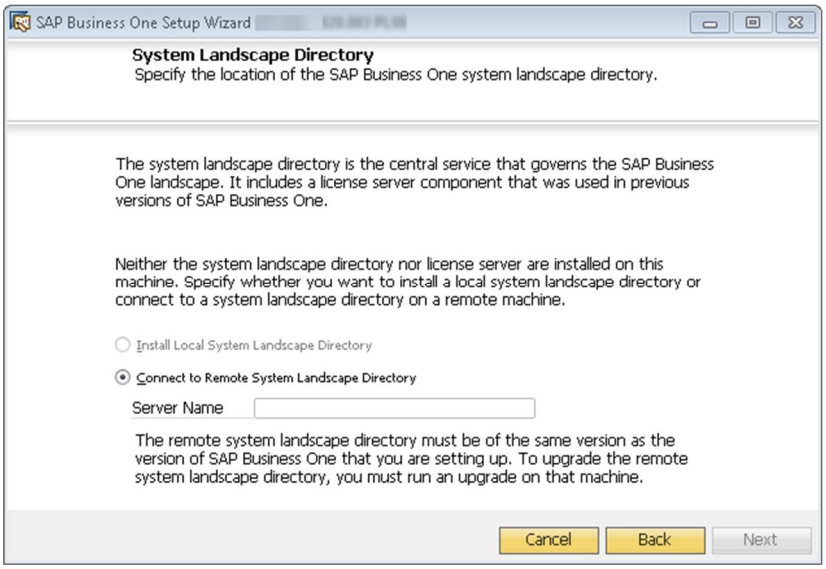
   > **Note**
   >
   > If you are sure that all the settings are correct, you can select the checkbox Skip Remaining Steps and Automatically Start Pre-Upgrade Test and Upgrade to bypass the remaining wizard steps and begin the process immediately.



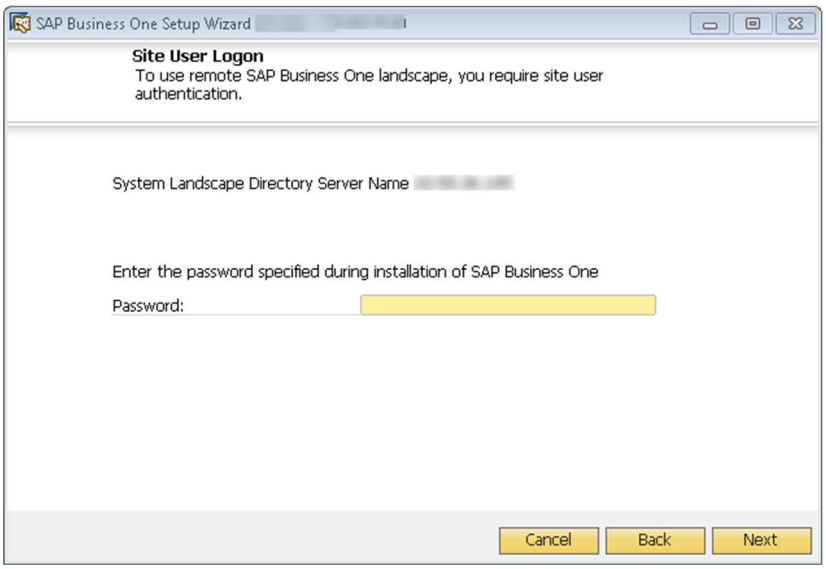
6. In the System Landscape Directory window, select Connect to Remote System Landscape Directory, specify the server, and choose Next.

   Note that the connected System Landscape Directory must have already been upgraded to the required version.

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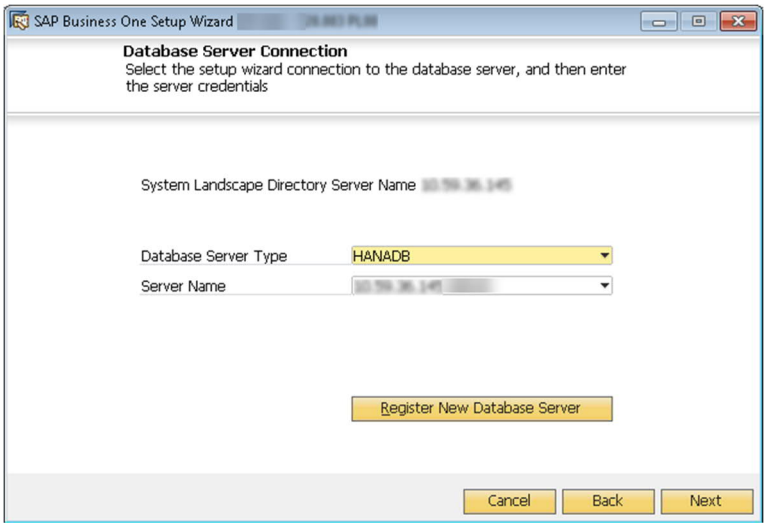
7. In the Site User Logon window, enter the password for the site super user `B1SiteUser`.



> **Note**
>
> If you chose to perform only the pre-upgrade test, you also have the option to connect to a database server. In this case, you need to specify the information for a database user instead of the site user.

8. In the Database Server Connection window, select the database server type (HANADB) and the server. Then choose Next to proceed.

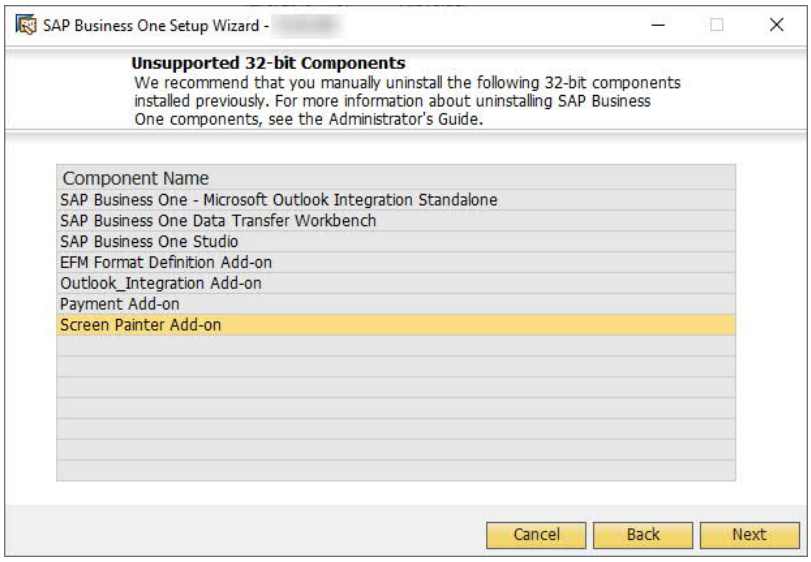
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If you do not find the database server you want to upgrade in the server list, you can register it in the System Landscape Directory. To do so, choose Register New Database Server, specify the relevant information, and choose Back to continue with the upgrade.

9. In the Unsupported 32-bit Components window, you can see the 32-bit components installed previously. We recommend that you manually uninstall these components. For more information about uninstalling SAP Business One, version for SAP HANA, see Uninstalling SAP Business One, version for SAP HANA.

> **Note**
>
> Add-Ons cannot be uninstalled from the SAP Business One Server by the setup wizard



10. In the Component Selections window, select the components you want to upgrade and choose Next.

If a component has already been upgraded to the current version, its checkbox is enabled but not selected. If you select an already upgraded component, the wizard overwrites all instances of installed components.

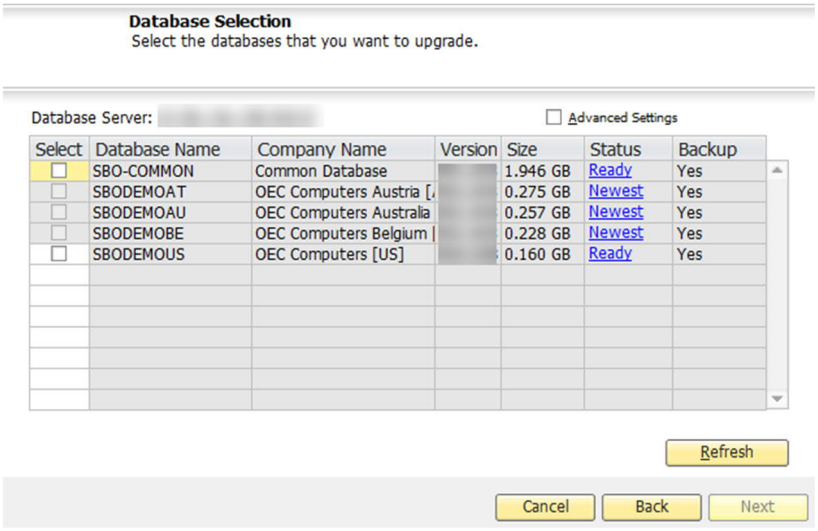
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The wizard also lists all third-party add-ons present in the `\Packages.x64\Add-Ons Autoreg` folders, which you can select to upgrade.

> **Notes**
>
> Upgrading the repository (shared folder and common database) is a prerequisite for upgrading other components or company schemas. If there are no installed versions of the SBO-COMMON, Upgrade Database is not allowed.
>
> If a component is indicated as Not Found, you can select the corresponding checkbox to install the component.

> **Notes**
>
> If a Demo database is required, click on the link to the SAP Help Portal to dowload your preferred localized Demo database. For more information, see Deploying Demo Databases.

11. In the Database Selection window, select the checkboxes of the schemas that you want to upgrade.

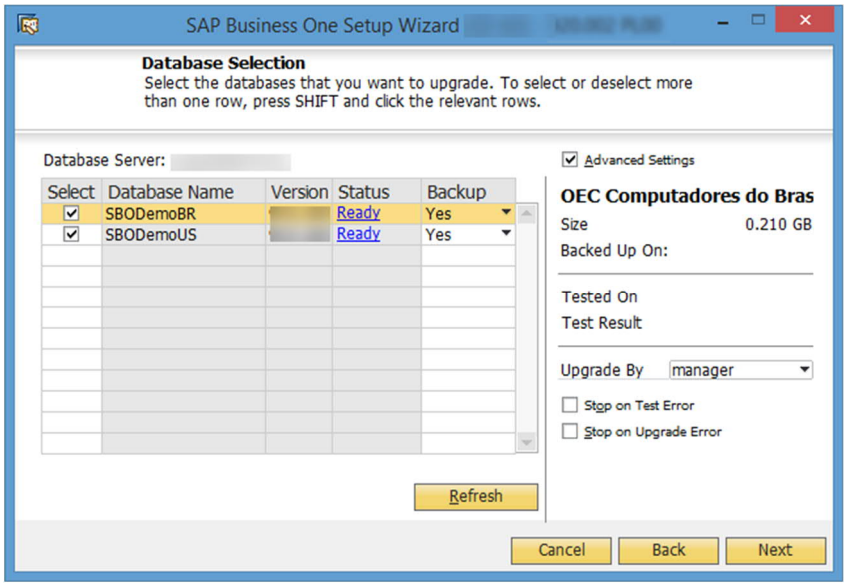


12. To view additional options and information, select the row of a company schema, select the Advanced Settings checkbox, and then specify the following:
    - Backup – From the dropdown lists in the Backup column, select whether to back up each schema before the upgrade.

      > **Caution**
      >
      > If you select not to back up a schema before upgrade, you cannot restore the schema should the upgrade fail. SAP does not provide support for such schemas in the case of an upgrade failure; a backup of the pre-upgrade schema is required to qualify for SAP support.

    - Upgrade By – From the dropdown list, select the SAP Business One superuser to perform the upgrade. By default, the wizard uses the `manager` account.
    - Stop on Test Error – Select this checkbox to force the wizard to stop the entire upgrade process if it encounters an error during a pre-upgrade test.
    - Stop on Upgrade Error – Select this checkbox to force the wizard to stop the entire upgrade process if it encounters an error while upgrading the schema.

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13. If errors occur which are preventing you from upgrading the company schemas, do the following:
    1. In the Status column, click the Not Ready link.

       Specific information appears.
    2. Do either of the following:
        - Fix the error and choose Refresh.
        - If the error cannot be fixed and you must contact SAP Support, deselect the checkbox.

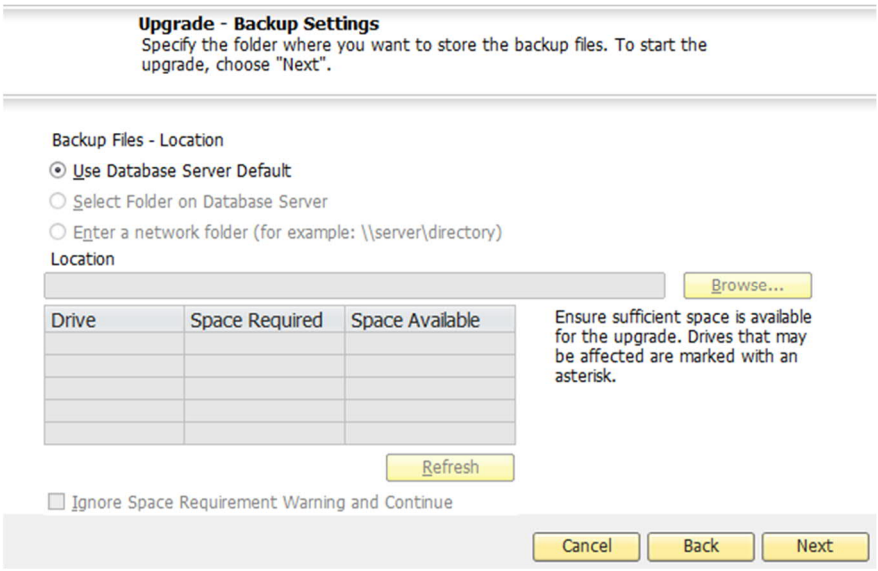
    In any of the following cases, the status of the company schema is Not Ready and you cannot select it for upgrade:

    - Upgrade is not possible:
        - The wizard does not support the company schema version.
        - The wizard cannot find the localization for the company schema from the locale list in the common database.
    - You must fix the errors to proceed with the upgrade:
        - The wizard finds more than one connection to the company schema.
        - The database user registered with the server is either locked or is not a database admin user.
14. When all the selected company schemas have the status Ready, choose Next.

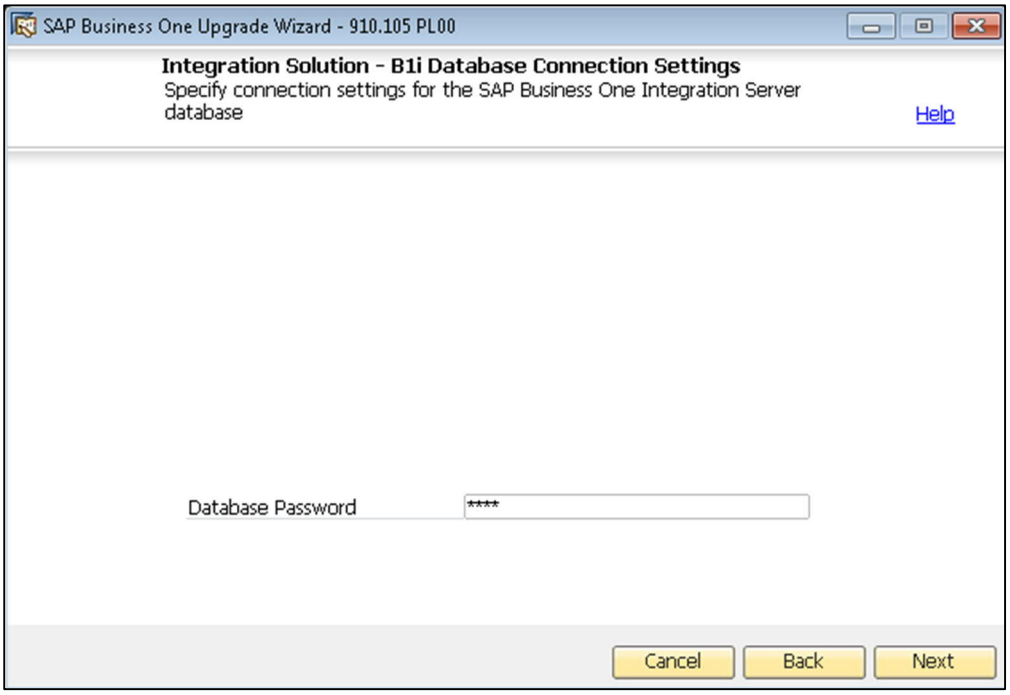
    > **Note**
    >
    > If any of the selected schemas has the status Not Ready, the wizard disables Next. You cannot proceed to the next step until you have fixed the problem.
15. In the Upgrade - Backup Settings window, choose Next.

    The Use Database Server Default radio button is automatically selected.

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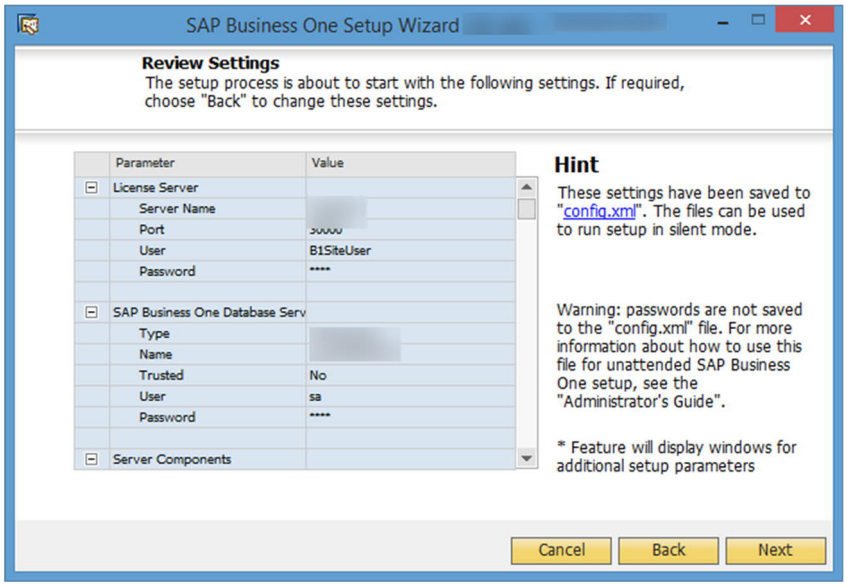


16. If you previously selected the integration framework for upgrade, do the following:
    1. In the Integration Solution - B1i Database Connection Settings window, enter the database password.



    2. In the subsequent Integration Solution - Scenario Packages windows, if you want to activate any new scenarios, select the corresponding checkboxes and specify the necessary information.
17. In the Review Settings window, review your configuration settings. To modify any of the settings, choose Back to return to the relevant window; otherwise, choose Next.

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18. In the Pre-Upgrade Test window, do the following:
    - To bypass the tests for certain company schemas, choose Enter Passcodes and upload one or several passcode files that you saved earlier. After uploading the files, choose Next and proceed to step 23.

      Note

      A passcode file is only valid for three days. Any changes to the company configuration render the passcode file invalid.
    - To perform pre-upgrade tests on each database to ensure its readiness for the upgrade and to reduce the possibility of upgrade failure, choose Start.
19. In the Pre-Upgrade Testing In Progress window, the wizard first checks the common database and then checks the company schemas one by one.

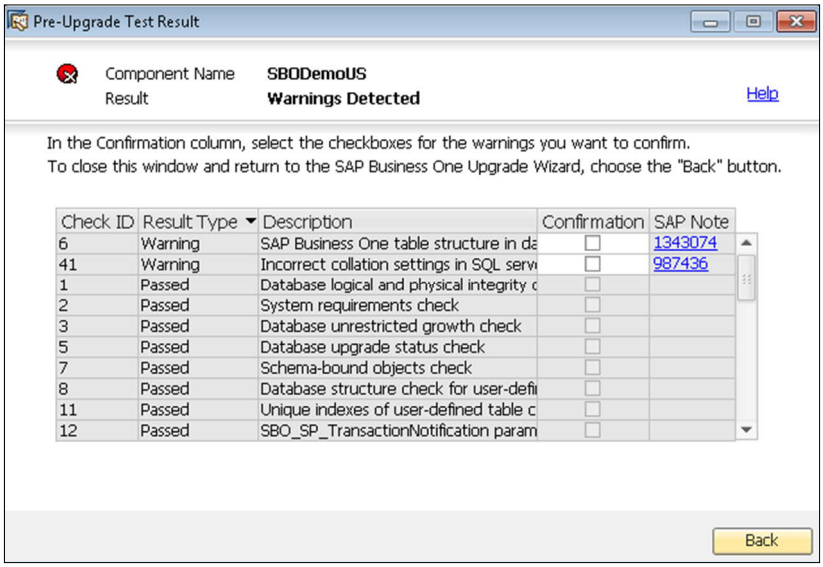
    Note

    If the common database does not pass the checks, the wizard does not continue with the rest of the checks.
20. The Pre-Upgrade Test window provides a detailed overview of the results of the pre-upgrade tests. You can view information about individual checks, possible solutions to errors, and recommendations for dealing with warnings by clicking the links to the corresponding notes in the SAP Note column.

    Depending on the results of the pre-upgrade tests, one of the following windows appears:
    - Pre-Upgrade Test: Passed – All components and databases successfully passed the pre-upgrade tests. Proceed to the Setup Summary window.
    - Pre-Upgrade Test: Errors Detected – One or more components or databases contain errors. You cannot continue upgrading. You must fix the reported errors or contact SAP for support, and then start the setup wizard again.
    - Pre-Upgrade Test: Warnings Detected – One or more components or databases contain warnings. It is strongly recommended that you first fix the issues, and then continue the upgrade:
      1. For each component or database that contains warnings, click the corresponding link in the Details column.

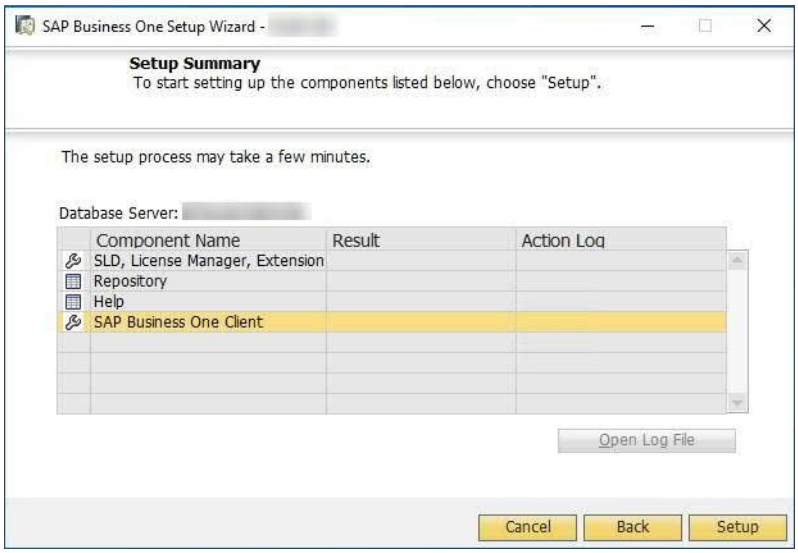
         The Pre-Upgrade Test Result window appears.

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2. In the Pre-Upgrade Test Result window, click the corresponding hyperlink in the SAP Note column and follow the recommendations. After fixing the issue, select the checkbox in the Confirmation column.do the following:
3. After confirming all the warnings, choose Back to return to the Pre-Upgrade Test window.
4. After you have confirmed all warnings for all components and databases, choose Next to open the Pre-Upgrade Test: Warnings Confirmed window, and then proceed to the next step.

21. The Setup Summary window displays an overview of the components and schemas that you have selected to upgrade (or install if some selected components are not installed). Do either of the following:
    - To begin the upgrade process, choose Upgrade.
    - To change the settings, choose Back to return to the previous steps.



The Upgrade in Process window displays the upgrade progress for each component and schema.

22. According to the upgrade results, one of the following windows is displayed:

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- Upgrade Result: Upgraded window: This window appears if the upgrade of all components and schemas was successful. To continue, choose Next.
- Upgrade Result: Errors window: This window appears if the upgrade of any component or schema failed. To continue with the restoration step of the rollback process, choose Next and proceed to the Restoring Components and Schemas section.

23. In the Congratulations window, choose Finish to close the wizard.

    To view a summary report of the various upgrade steps, such as company schemas and pre-upgrade test results, click the Upgrade Summary link.

Post-requisites

1. For each upgraded company schema, in the Administration Console, verify if an update (or even reinitialization) is required; if so, update (or reinitialize) the schema. For more information, see Initializing and Updating Company Schemas.
2. Import the license file for the new release.
3. On each client workstation, upgrade the SAP Business One client. For more information, see Upgrading the SAP Business One Client.

6.4.1 Restoring Schemas and Components

If the upgrade process fails, the SAP Business One setup wizard restores the schemas and certain components. The other components must be restored manually.

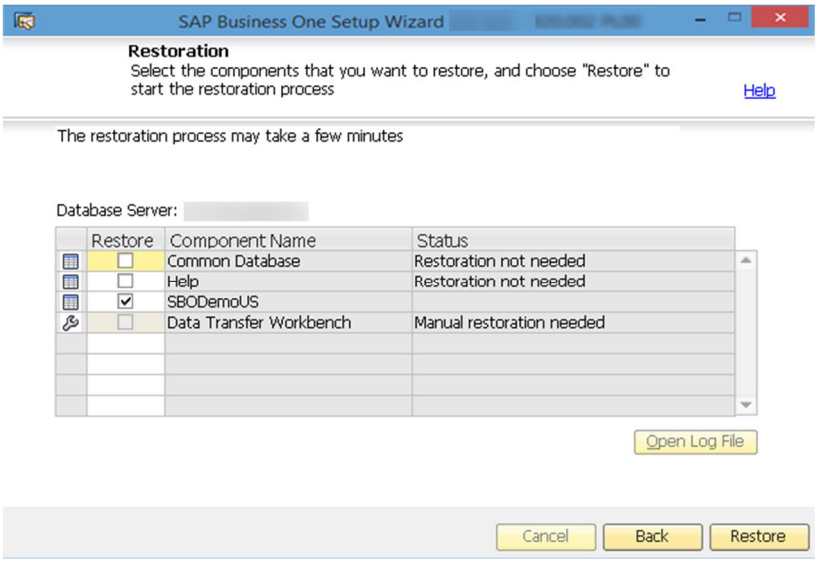
> **Note**
>
> The procedure below continues from the penultimate step in the previous section, Upgrading Schemas and Other Components. It is only relevant for situations where the upgrade has failed.

Procedure

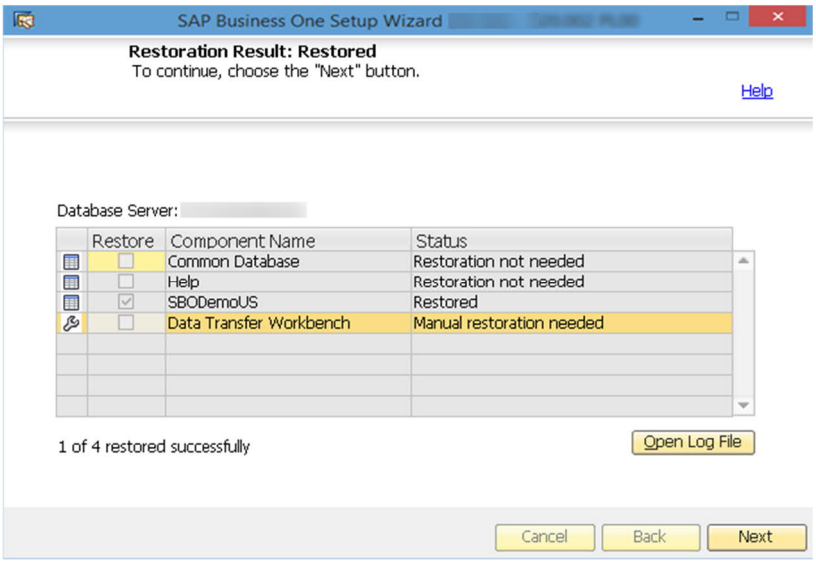
To restore components and databases, do the following:

1. In the Restoration window, select the checkboxes of the components and schemas that you want to restore, and choose Next.

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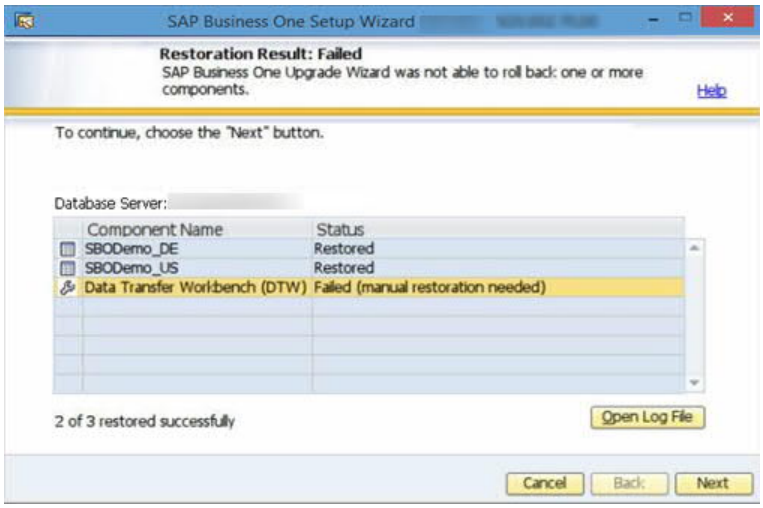


2. Depending on the results of the restoration process, one of the following windows appears:
   - If the restoration was successful, the Restoration Result: Restored window appears. To complete the restoration, do the following:
     1. In the Restoration Result: Restored window, choose Next.



     2. In the Congratulations window, choose Finish to complete the restoration process.
   - If the restoration failed, the Restoration Result: Failed window appears. To complete the restoration, do the following:
     1. In the Restoration Result: Failed window, choose Next.

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2. In the window displayed, choose Finish to exit.

Note

If the restoration fails, to roll back SAP Business One to the version before the upgrade, you must do a manual restoration.

Post-requisite

After the setup wizard has finished restoring the schemas, you must recover the entire SAP HANA instance that you backed up before you ran the setup wizard. Note that all schemas will be restored, regardless of whether the upgrade result was successful or not for each schema.

6.4.2 Troubleshooting Upgrades

To troubleshoot the upgrading process, check the following:

- All operating system users (owner, group, others) have write permission to the shared folder `b1_shf` on the SAP HANA server computer.
- If you cannot connect to the System Landscape Directory using the server name, use the IP address of the server computer.
- To have the SBO Mailer's signature copied after upgrade, do the following:
  1. In a Web browser, navigate to the following URL:

     `https://<Mailer Address>:<Port>/mailer`
  2. If you have not logged on to the SLD service or license service, then in the logon page, enter the site user password and choose Log On.
  3. From the Database Server dropdown list, select an SAP HANA instance and choose Save.
  4. Log off from SAP Business One, version for SAP HANA, and then log on again.

  The signature is copied.

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6.4.3 Performing Silent Upgrades

You can upgrade the SAP Business One, version for SAP HANA Windows-based components and SAP Business One Client using a silent mode by calling …\Setup.exe from the upgrade package.

You can use the silent mode to upgrade the following components:

- Repository
- Databases
- All components of Server Tools, including:
  - Data Interface Server
  - Workflow
- All components of Implementation Tools, including:
  - Data Interface API
  - SAP Business One Client
  - Browser Access Service
  - Excel Report and Interactive Analysis
- Integration Solution Components
- All Add-Ons

To upgrade SAP Business One, version for SAP HANA, provide the following argument:

```
setup.exe <Config.XML> <parameter> <value>
```

To obtain the required Config.XML file, first run the setup wizard in the interactive mode. After generating this file, you can make a copy and use a text editor to modify the values for future use, as required.

You can find the configuration file in the …\%PROGRAMDATA%>\SAP\SAP Business One\Log\SAP Business One\SetupWizard\Config folder.

You can provide several different parameters, or multiple parameters, as shown in the following table.

Type	Parameter	Value
Database Server and License Server authentication	**-DbPassword**	Database server password
	-SitePassword	Site user password
Integration Solution Components	**-B1iDBPassword**	Integration framework database server password
	-B1iAdminPassword	Integration framework Tomcat server administrator password
	-B1iDIPassword	Company password for DI calls

Example

```
Setup.exe "C:\my_config\Config.XML" -DbPassword x1Y3s -SitePassword pO3kAnk3
```


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6.5 Upgrading the SAP Business One Client

After the server upgrade, you must upgrade the SAP Business One client on all of your workstations.

For an upgrade from a previous release family (for example, from the 9.3 release to the 10.0 release), run the setup wizard on each workstation to upgrade the SAP Business One client.

Alternatively, you can uninstall the old client and then install the new client using the client installation program. The client installation package is available in the entire product package as well as in the shared folder `b1_shf`.

> **Note**
>
> SAP Business One 10.0, version for SAP HANA supports only 64-bit SAP Business One client, so If you have installed a 32-bit SAP Business One client on a client workstation, you first must manually uninstall the 32-bit client, and then install or upgrade the 64-bit client.

Prerequisite

For the SAP Business One client agent to upgrade third-party add-ons in silent mode, you must recreate the ARD file of the add-on, using the latest version of the Add-On Registration Data Generator. For more information, see Enabling Silent Upgrades for Third-Party Add-Ons.

Procedure

1. Run the client as the administrator.
2. Log on to a company.

   A system message appears to inform you that the client is not updated.
3. In the system message window, choose OK to upgrade the client.

6.6 Upgrading SAP Business One Add-Ons

When you select the Add-On checkbox in the Component Selections window of the setup wizard, the following occurs:

- New versions of all SAP add-ons are automatically registered on the SAP Business One server.
- New installers are uploaded to the server during the upgrade of the common database.

Add-ons that were already installed and assigned to a company are re-registered with new releases and assigned to the same company.

On a client computer, upon the next logon to a company assigned with add-ons, installers for the new add-on releases run automatically.

6.6.1 Troubleshooting Add-On Upgrades

When upgrading add-ons in an upgraded company for which the server name was previously something like `(local)`, you may encounter a message about installation failure.

SAP Business One has introduced a license security mechanism, and we do not recommend that you specify a server name such as `(local)`. In this case, during an upgrade, the user defines the server name as an IP address

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or a computer name. The application does not find the previous, `(local)`, name of the upgraded company, which prevents the previous add-ons from being upgraded.

To solve this problem, do the following:

1. Go to the …`\SAP Business One\` folder and locate the `AddonsLocalRegistration.sbo` file.
2. Change the server name of each related add-on to the new name specified in the license server.

   Example

   - Old name: `<Common ID="1" Name="(local)"/>`
   - New name: `<Common ID="1" Name="MyServerName"/>`

6.6.2 Enabling Silent Upgrades for Third-Party Add-Ons

To enable the SAP Business One client agent to upgrade a third-party add-on in silent mode, do either of the following:

- If your add-on needs to be installed, you must recreate the add-on's ARD file using the latest version of the Add-On Registration Data Generator to enable silent upgrades (and installations).
- If your add-on does not need to be installed, you can use the Extension Manager to manage its upgrade. For more information, see the guide How to Package and Deploy SAP Business One Extensions for Lightweight Deployment on SAP Help Portal.

Enabling Silent Upgrade Using Add-On Registration Data Generator

1. To start the Add-On Registration Data Generator, run the `AddOnRegDataGen.exe` file, which is typically located in the `...\SAP Business One SDK\Tools\AddOnRegDataGen` folder.
2. Load an existing file or enter the mandatory information.

   For more information, see Create a Registration Data File in the SDK help file.
3. Select the Silent Mode checkbox.
4. If necessary, in the Installer Command Line, Uninstaller Command Line Arguments, or Upgrade Command Line field, enter any required command line arguments.
5. Choose Generate File.

   Note

   You may be required to rebuild the installation package of the add-on and redesign the installation and configuration process. For example, if the add-on uses an installation wizard that requires the user to specify some information, then you can perform the configuration steps in the SAP Business One client after installing the add-on instead. Alternatively, you can provide the required information as command line arguments in the ARD file.

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7 Performing Post-Installation Activities

Immediately after installing SAP Business One, you are required to perform the following activities:

- Configure services
- Install the license key
- Initialize company schemas
- Assign add-ons
- Perform post-installation activities for the integration framework

> **Recommendation**
>
> We also recommend that you configure a backup strategy for company schemas and application folders.
>
> You can use the remote support platform for SAP Business One to automatically back up data according to a defined strategy. For more information, see the Online Help for the remote support platform.

> **Note**
>
> If you use Microsoft Internet Explorer to access the SLD, license control center, or job service control center on Microsoft Windows Server 2008 R2, you must first disable the Microsoft Internet Explorer Enhanced Security Configuration (IE ESC), as follows:
>
> 1. In Microsoft Windows, choose Start → All Programs → Administrative Tools → Server Manager.
> 2. In the Server Manager window, in the Security Information area, click Configure IE ESC.
> 3. In the Internet Explorer Enhanced Security Configuration window, in the Administrators and Users areas, select both Off radio buttons.
> 4. Choose OK.
>
> If you do not want to turn off the IE ESC, you can access the SLD using other Web browsers.

> **Note**
>
> If you use a proxy for your Internet connection, you must add the full hostname or IP address of any Web server (for example, SLD) to the proxy exception list of your Web browser; in other words, do not use a proxy for these addresses.

7.1 Working with the System Landscape Directory

The System Landscape Directory (SLD) control center is a central workplace where you perform various administrative tasks.

You can access the SLD control center in a Web browser for the following:

- Enabling the Single Sign-on Function
- Managing Site Users
- Enabling Dynamic Encryption Keys

- Exporting and Importing Configuration File
- Adding Services in the System Landscape Directory
- Mapping External Addresses to Internal Addresses
- Working with Audit Logs

> **Note**
>
> For statistics (SAP Business One usage frequency) used internally by SAP only, we use information including system number and hardware key from your SAP Business One landscape.

7.1.1 Logging on to the System Landscape Directory Control Center

After the installation, the SLD service starts automatically. You can then access the SLD control center in a Web browser.

Procedure

1. In a Web browser, navigate to the following URL: **`https://<Server Address>:<Port>/ControlCenter`**

   > **Note**
   >
   > The URL address is case-sensitive.

   The default port number is `40000`.
2. In the logon page, enter the name and password for a site user (for example, `B1SiteUser`).

   > **Note**
   >
   > The site user name is case-sensitive.
3. Choose Log On.

7.1.2 Enabling the Single Sign-on Function

SAP Business One, version for SAP HANA supports single sign-on (SSO) functionality. You can bind an SAP Business One user account to a Microsoft Windows domain account. For security reasons, we recommend that you enable the single sign-on function after installing SAP Business One, version for SAP HANA.

After registering a Service Principal Name (SPN) and binding SAP Business One users to Microsoft Windows accounts, you can enable the single sign-on function in the SLD. For more information, see Enabling Single Sign-On.

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7.1.3 Managing Site Users

The site user account serves as site-level authentication for performing various administrative tasks, as listed in the table below:

Site Users	Function
`B1SiteUser`	Life cycle management: installation, upgrade, uninstallation
	Configuring services installed on Windows (for example, Workflow service)
	Company creation
All	All operations performed in the System Landscape Directory
	Accessing and performing operations in Web-based service control centers (for example, job service, Administration Console of the analytics platform)

B1SiteUser

The site super user, whose account information should be known only to a few selected system administrators, is `B1SiteUser`. You can update the password of `B1SiteUser` in the System Landscape Directory, on the Security Settings tab, by choosing Change B1SiteUser Password. You will need to provide the old password to make the change.

The `B1SiteUser` account cannot be removed.

> **Note**
>
> If you forget the password of the site user and want to reset it, you must log on to the local machine on which the System Landscape Directory is installed and on the SLD logon page, click Forgot password? . You will need to provide the server name and database user credentials to make the change.

Domain Users as Less-Privileged Site Users

You can assign appropriate Windows domain users as site users to perform administrative tasks that require fewer privileges in the System Landscape Directory.

Prerequisite

You have entered Windows domain user authentication information during the installation of the System Landscape Directory. For more information, see Installing SAP Business One, Version for SAP HANA.

Procedure

To assign a Windows domain user as a less-privileged site user, do the following:

1. In a Web browser, log on to the System Landscape Directory.
2. On the Security tab, choose Manage Site Users.
3. In the Manage Site Users window, in the edit box at the top, enter a domain user account in the format of **`Domain\User`**.
4. To assign the domain user as a site user, choose Add.

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Result

You can delete domain-user site users at any time. Additionally, a domain user can even remove himself or herself as a site user. After the removal, the domain user can no longer log on to the System Landscape Directory.

7.1.4 Enabling Dynamic Encryption Keys for the Data in Company Databases

You can encrypt data in your company schemas using a static key or a dynamic key.

> **Recommendation**
>
> We strongly recommend that you use a dynamic key to encrypt your company schemas.

> **Caution**
>
> Enabling the use of dynamic keys is an irreversible process.

Procedure

1. Log on to the SLD control center.
2. On the Security tab, in the Encryption Key Management area, choose Enable Dynamic Key.

   > **Note**
   >
   > After enabling the use of dynamic keys, you can generate a new dynamic key at any time. To do so, choose Enable Dynamic Key again.
3. Open the SAP Business One client application, log on to each of your companies, and accept to update the company schema.

   Note that you must perform this for all company schemas on the servers registered in the System Landscape Directory.

7.1.5 Exporting and Importing Configuration File

To secure your data, we recommend that you export your security configuration file right after you finish installing the server tools (Linux) and the SAP Business One server, version for SAP HANA. For more information, see Exporting Configuration Files.

If the server on which you install the SLD service crashes or is corrupted, you must restore all the security settings after the new license server is started. For more information, see Importing Configuration Files.

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7.1.6 Adding Services in the System Landscape Directory

The Services tab of the SLD displays all SAP Business One services that have been installed and registered on the license server (SAP HANA server). The services include the following:

- License manager
- Job service
- Analytics Platform
- App framework
- Backup service
- Browser Access service
- Service Layer
- Workflow
- Mobile Service
- Web Client
- Electronic Document Service

If you accidentally delete a service from the SLD, you must add the service again; otherwise, you cannot use the service.

Procedure

1. Log on to the SLD control center.
2. On the Services tab, choose Add.
3. In the Add Service window, specify the following information:
   - Service Type: Only installed service types are available.
   - Service Name: Enter a name for the service
   - Service Unit: For Job Service and Service Layer, you must make sure to select a database instance which is already registered in the SLD control center.
   - Service URL: Specify the service URLs as below:
     - License Manager: **`https://<Server Name/IP>:<port>/LicenseControlCenter`**

       Note

       If you have enabled high availability for the license server, you need to specify the License Manager as **`https://<Virtual IP Address>:<port>/LicenseControlCenter`**.
     - Analytics platform: **`https://<Server Name/IP>:<port>/Enablement`**
     - Job service: **`https://<Server Name/IP>:<port>/job`**
     - Browser Access service: **`https://<Server Name/IP>:<port>dispatcher`**
     - App framework: **`http://<Server Name>:80xx/`** or **`https://<Server Name>:43xx/`** (where “xx” represents the SAP HANA instance number)
     - Backup service: **`https://<Server Name/IP>:<port>/BackupService/`**
     - Service Layer: **`https://<Server Name/IP>:<port>`** (Documentation for SAP Business One Service Layer) or **`https://<Server Name/IP>:<port>/ServiceLayerController`** (SAP Business One Service Layer Controller)

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- Workflow: **`https://<Server Name/IP>:<port>/workflow`**
- Mobile Service : **`https://<Server Name/IP>:<port>/mobileservice`**
- Web Client: **`https://<Server Name/IP>:<port>`**
- Electronic Document Service: **`https://<Server Name/IP>:<port>`**

7.1.7 Mapping External Addresses to Internal Addresses

To enable access from outside the local network, you must map an external access URL to each required component.

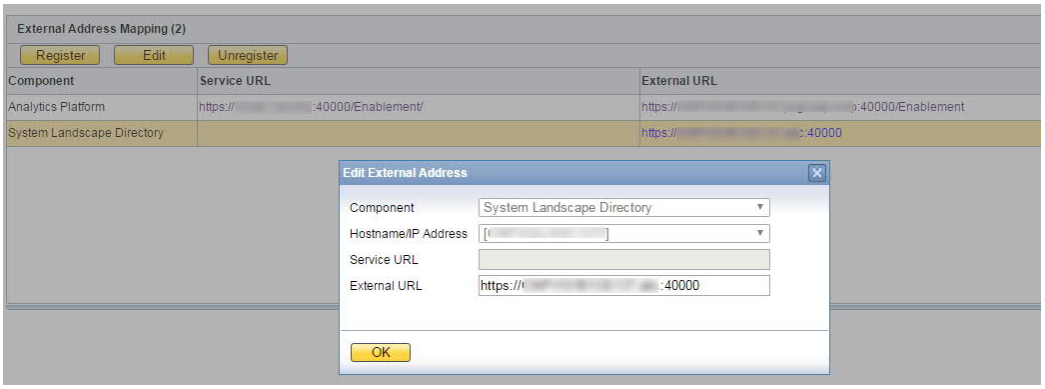
Procedure

1. Log on to the SLD control center.
2. On the External Mapping tab, choose Register.
3. In the Edit Register External Address window, specify the following information:
   1. Component
   2. Hostname or IP address of the machine on which the component is installed
   3. External URL

   The external access URL must have the format **`<protocol>://<Path>:<Port>`**.

   Example

   `http://<IP address>:8080`



   The Hostname/IP Address field for the SLD may display the hostname rather than the FQDN of the SLD server, or it may be empty; either is fine and can be ignored.
4. Choose OK.

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Post-requisites

After finishing mapping the addresses for all required components, you must restart the services on the machines on which they're installed.

> **Note**
>
> For the Web Client, you need to restart the service by performing the following steps:
>
> 1. Log on to the Linux server as `root`.
> 2. In a command line terminal, navigate to the directory …`/user/sap/SAPBusinessOne/WebClient` where the `startup.sh` script is located.
> 3. Restart the program from the command line by entering the following command:
>
>    ```
>    sh startup.sh restart
>    ```
>
>   The restart process begins.

> **Note**
>
> Web Client does not start automatically after a Microsoft Windows server restarts. You need to manually restart the Web Client. For more information, see SAP Note 2875511.

7.1.8 Working with Audit Logs

The audit log records a time stamped list of all changes to system landscape directory resources, including the user that made the change and the request. The audit log records changes made using the SLD control center.

To access the audit log, in the SLD control center, choose the Audit Logs tab.

The Audit Logs area provides an overview of all changes to SLD resources, and displays the following information for each change:

- Sequence Number – Indicates the order in which the changes to SLD resources occurred.
- Request – The request sent to the SLD Service API. The request is either an SLD function or an SLD entity.
- Resource – The SLD resource that was changed and the operation that was performed.
- User Name – The name of the site user who made the change.
- Changed On – The date and time at which the SLD resource was changed.

You can use the controls and the top of the Audit Logs area to filter the entries displayed in the audit log. For example, you can filter by specific users, requests, and time periods.

To view detailed information about the properties that were changed for a specific resource, select the row for the corresponding request in the audit log. The Audit Log Details area displays the following information:

- Property – This column lists all the changed and unchanged properties for the selected resource.
- Previous Value – The value of the property before the change occurred.
- New Value – The updated value of the property after the changed occurred.

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7.1.8.1 Cleaning Up Audit Logs

Failing to delete audit log records can cause the SLD database to become relatively large, which may result in errors during the upgrade of the SLD. The clean up audit log function allows you to clean up your audit logs.

Procedure

To clean up audit log records of changes to system landscape directory resources, perform the following:

1. In the SLD control center, choose the Audit Logs tab.
2. Choose the Clean Up button.
3. In the Clean Up Audit Log window, in the To Date field, select the date to up to which you want to delete your audit logs.
4. Choose the Clean Up button, and then choose Yes in the Confirmation window.

7.2 Configuring Services

You must configure the services you have installed in order for them to operate properly. The subsections below introduce how to configure various services.

> **Note**
>
> To use the analytical features powered by SAP HANA, you need to initialize and maintain SAP Business One company schemas in the Administration Console. For more information, see Initializing and Maintaining Company Schemas for Analytical Features.
>
> For more information about the backup service, see Exporting Company Schemas.

7.2.1 License Control Center

> **Caution**
>
> If you have installed a firewall on the license server, make sure that the firewall is not blocking the port number you use for the license service; otherwise, the license service and SLD cannot work.
>
> In addition, if you are using port X, make sure that you open both port X and port (X+1) in the firewall. For example, if you are using port `40000`, make sure to also open port `40001`.

The license service is a mandatory service that manages the application license mechanism according to the license key issued by SAP. Web access to the license service enables you to do the following:

- Find and copy the hardware key to run your SAP Business One application, version for SAP HANA and apply for SAP licenses
- Import the license file
- View the basic license information

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To use your SAP Business One application according to your contract, you are required to install a license key assigned by SAP.

For new installations, you can use the application for a period of 31 days without a license key. After that period, the SAP Business One application, version for SAP HANA needs a license key to run. We strongly recommend that you request a license key immediately after installing the application.

You also must install a new license key whenever any of the following occurs:

- You have additional users or components.
- The hardware key changes.
- The current license expires.
- You installed a new version of SAP Business One, version for SAP HANA.

To avoid accidentally changing the hardware key, do not change the MAC address of your Linux system (for example, network device).

> **Note**
>
> If there is more than one network adapter installed on your Linux system, it might happen that the hardware key changes due to changing device order between reboots. For more information, see SAP Note 1178686.

The following actions are safe and do not change the hardware key:

- Add a new user logon
- Change the computer date or time
- Change the hardware configuration

Procedure

1. In a Web browser, navigate to the following URL:

   `https://<Server Address>:<Port>/LicenseControlCenter`

   If you have enabled high availability for the license server, navigate to the following URL:

   `https://<Virtual IP Address>:<port>/LicenseControlCenter`

   Alternatively, on the Services tab in the System Landscape Directory, you can click the license manager link to access the license control center.

   > **Notes**
   >
   > - The URL of the service is case-sensitive.

2. If you have not logged on to the SLD service, in the logon page, enter the site user name and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.

3. The General Information area displays the details of the license server.

   If you have not yet obtained a license key, apply to SAP for a license key using the hardware key.

4. To install the license key, choose Browse and select the TXT file you received from SAP
5. Choose Import License File.

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7.2.2 Job Service

The job service manages the following settings on the server side:

- SBO Mailer settings
- Alert and scheduling settings

7.2.2.1 SBO Mailer

This optional service enables you to send emails from SAP Business One, version for SAP HANA.

7.2.2.1.1 Configuring SBO Mailer

The process of configuring SBO Mailer comprises the following steps:

1. Define the mail settings and connect to the SMTP server from the SAP Business One Job Service Web page.
2. Enable the mailer service from the SAP Business One client or from the SLD control center.

> **Note**
>
> The SBO Mailer configuration Web page does not provide access to SBO Mailer email signature settings.
>
> To access these settings, from the SAP Business One Main Menu, choose Administration → System Initialization → E-Mail Settings.

Procedure

1. In a Web browser, navigate to the following URL:

   ```
   https://<Server Address>:<Port>/job
   ```

   Alternatively, on the Services tab in the system landscape directory, you can click the Job Service link to access the settings.

   > **Notes**
   >
   > - If you use a proxy for your Internet connection, you must add the full hostname or IP address of any Web server (for example, SLD) to the proxy exception list of your Web browser; in other words, do not use a proxy for these addresses.
   > - The URL of the service is case sensitive.
   > - On the Services tab in the system landscape directory, make sure that the job service is already bound to a database instance which is registered in the SLD control center.

2. If you have not logged on to the SLD service, in the logon page, enter the site user name (`B1SiteUser`) and password, and then choose Log On.

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> **Note**
>
> The site user name is case sensitive.

3. On the Mailer Settings tab, specify the following mandatory mail settings information and choose Save:
   - SMTP Server: Name or IP address of your outgoing mail server.
   - SMTP Port: Port number for the SMTP server.

     > **Note**
     >
     > If your SMTP server does not allow anonymous connection, specify a user name and password; otherwise, select the Anonymous checkbox.

   - In the Language dropdown list, select the language for email text.
   - If your SMTP server requires TLS encryption, make sure the Use TLS Encryption checkbox is selected.
   - If you are using a right-to-left language, select the Right-to-Left checkbox.
   - To include the subject line in the body of the message, select the Include Subject in Message Body checkbox.
4. To connect to the SMTP server, choose Start.

   The status changes to `RUNNING` and the button changes to Stop.

   > **Note**
   >
   > To change the SMTP server, add or remove companies, you must first stop the connection by choosing Stop.

5. Log on to the SAP Business One client as a superuser or a power user and do the following to enable mailing services for databases.
   1. Select the database for which you want to enable the mailing service.
   2. On the Service tab of the General Settings window (Main Menu → Administration → System Initialization → General Settings), select the Enable Mailer checkbox.

   Alternatively, you can also enable mailing services for databases from the System Landscape Directory control center as follows:
   1. Log on to the SLD control center.
   2. On the DB Instances and Companies tab, in the Companies area, select the databases on which you intend to enable the mailing services and choose Enable Mailer.

Result

You can now proceed to create a mount point for your shared attachments folder in your Linux server. For more information, see Setting Up Shared Attachments Folder.

7.2.2.1.2 Setting Up Shared Attachments Folder

To send emails with attachments using SBO Mailer, you must perform some additional configurations.

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Procedure

1. Create a folder on either a Linux machine or a Windows machine and grant full permission to the folder, for example: `\\server\folder\shared_folder`.
2. Log on to the SAP Business One client and do the following:
   1. On the Path tab of the General Settings window (Main Menu → Administration → System Initialization → General Settings), specify "**`\\server>\folder\shared_folder`**" as the attachments folder.
   2. Send a test email with an attachment (for example, an A/R invoice).
3. In the SAP HANA studio, execute the following query against the company schema in question:

   ```
   select top 1 "Attachment" from OALR order by "Code" Desc
   ```

   The result looks like the following: "`\\server\folder\shared_folder\AR Invoice_1.pdf`".
4. Copy the query result to a text editor, remove the file name, and replace the backslash (`\`) with the forward slash (`/`).

   The result is the shared folder path saved in the database, for example: **`//server/folder/shared_folder`**.
5. Log on to the Linux server as `root` and do the following:
   1. Create an empty folder, for example: **`/mnt/sbomailer`**.

      Caution

      The name of the mount point must not contain underscores (_).
      - Correct example: **`/mnt/sbomailer`**
      - Incorrect example: **`/mnt/sbo_mailer`**
   2. Mount the folder in step 4 to the empty folder, using the following command:

      ```
      mount -t cifs -o user=b1service0,pass=b1service0
      '//server/folder/shared_folder' /mnt/sbomailer
      ```

7.2.2.1.3 Troubleshooting

The following troubleshooting information may be required when configuring the mail services:

1. Ensure that you have already set up email accounts for SAP Business One users on the specified mail server. To verify the connection with the mail server, in the Mail Settings area, choose Test Connection.
2. If the SMTP server requires authentication, for example, if the SMTP server is configured to accept only logon-authenticated mails, you must not select the Anonymous option in the Mail Settings area.
3. To check whether the connection to the SMTP server works, send a test email. If the connection fails, verify that you have done the following:
   - Entered the correct name of your mail server
   - Entered the correct user name and password
   - Restarted the connection to the SMTP server after changing any of the settings

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7.2.2.2 Alert and Scheduling Settings

To use the alert and scheduling function to have SAP Business One automatically notify selected users whenever certain system events occur, or to have SAP Business One automatically run previously scheduled tasks, you must first start the alert service for the companies on the server side.

Procedure

1. In a Web browser, navigate to the following URL:

   `https://<Server Address>:<Port>/job`

   Alternatively, on the Services tab in the system landscape directory, you can click the Job Service link to access the settings.

   > **Notes**
   >
   > - If you use a proxy for your Internet connection, you must add the full hostname or IP address of any Web server (for example, SLD) to the proxy exception list of your Web browser; in other words, do not use a proxy for these addresses.
   > - The URL of the service is case sensitive.
   > - On the Services tab in the system landscape directory, make sure that the job service is already bound to a database instance which is registered in the SLD control center.

2. If you have not logged on to the SLD service, on the logon page, enter the site user name (`B1SiteUser`) and password, and choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.

3. On the Alert and Scheduling Settings tab, if you want to change the technical user used to execute the alerts, enter the user code for an SAP Business One user and then choose Save.

   > **Note**
   >
   > If you want to use a user different from the default user `AlertSvc`, you must ensure the user is created in all the companies. Otherwise, all the alert settings are ineffective for the companies missing this user.
   >
   > This technical user is used for database connection and not intended for any business transactions. You do not have to assign a license to this technical user, and we recommend that you don't.

4. To start the alert and scheduling service, choose Start.

   The status changes to `RUNNING` and the button changes to Stop.

   > **Note**
   >
   > To change the technical user or the company selection, you must first stop the connection by choosing Stop.

5. Log on to the SAP Business One client as a superuser or a power user and do the following to enable alert and scheduling services for databases.
   1. Select the database for which you want to enable the alert and scheduling service.

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2. On the Service tab of the General Settings window (Main Menu → Administration → System Initialization → General Settings), select the Enable Alert Service checkbox.

Alternatively, you can also enable the alert and scheduling services for databases from the System Landscape Directory control center as follows:

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the Companies area, select the databases on which you intend to enable the alert and scheduling services and choose Enable Alert.

Result

You can now log on to each of your companies in the SAP Business One client and define the alert settings on the client side. For more information, see the online help.

7.2.3 Pictures Folder

To display pictures which are stored in the pictures folder in the SAP Business One client, such as company logos, you must perform some additional configurations.

Procedure

1. Create a folder on a Windows machine and grant full permission to the folder, for example: `\\server\folder\shared_folder`.
2. Log on to the SAP Business One client. On the Path tab of the General Settings window (Main Menu → Administration → System Initialization → General Settings), specify **`\\server>\folder\shared_folder`** as the picture folder.
3. In the SAP HANA studio, execute the following query against the company schema in question:

   ```
   select "BitmapPath"from OADP
   ```

   The result looks like the following: "`\\server\folder\shared_folder`".
4. Copy the query result to a text editor, remove the file name, and replace the backslash (`\`) with the forward slash (`/`).

   The result is the shared folder path saved in the database, for example: **`//server/folder/shared_folder`**.
5. Log on to the Linux server as `root` and do the following:
   1. Create an empty folder, for example: **`/mnt/sharedpicture`**.

      Caution

      The name of the mount point must not contain underscores (_).

      - Correct example: **`/mnt/sharedpicture`**
      - Incorrect example: **`/mnt/shared_picture`**
   2. Mount the folder in step 4 to the empty folder, using the following command:

      ```
      mount -t cifs -o user=b1service0,pass=b1service0,
      dir_mode=0777,file_mode=0777,rw
      '//server/folder/shared_folder' /mnt/sharedpicture
      ```


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Note

The user (**`b1service0`**) and the relevant password in the command are for a Windows machine user in step 1.

7.2.4 App Framework

After installation is complete, SAP HANA Extended Application Services (SAP HANA XS engine) switches to embedded mode. We highly recommend that you keep the SAP HANA XS engine in embedded mode to enhance the overall performance of the app framework.

7.2.4.1 Port Number

The default port number used for the app framework is `43xx` or `80xx` (where xx represents the SAP HANA instance number).

Example

If you installed the server tools on SAP HANA instance `01`, you should ensure port `4301` or `8001` is not being used by other applications.

If you have changed the port used for the SAP HANA XS, you must update the port number in the System Landscape Directory (SLD) for the app framework service. To do so, follow the steps below:

1. To access the SLD, in a Web browser, navigate to the following URL:

   `https://<Server Address>:<Port>/ControlCenter`
2. In the logon page, enter the site user name and password, and then choose Log On.

   Note

   The site user name is case sensitive.
3. On the Services tab, select the app framework service and choose Edit.
4. In the Edit Service window, in the Service URL field, change the port number (the number behind the colon).
5. To save the changes, choose OK.

For more information, see the Maintaining HTTP Destinations section of the SAP HANA Developer Guide at http://help.sap.hana/hana_platform and instructions about configuring SSL in this guide.

7.2.4.2 Configuring App Framework for SAP HANA Multitenant Database Containers

After the installation, to enable the Fiori-style cockpit and pervasive analytics to work well with SAP HANA multitenant database containers, the app framework must be configured.

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Procedure

1. Log on to the SAP HANA studio and proceed as below:
   1. In the Systems list, right-click a blank space and choose Add System...
   2. In the Specify System window, separately add a system database and a tenant database.
      - To add a system database, in the Mode field, you must select Multiple containers and System database, and then click Next.
      - To add a tenant database, in the Mode field, you must select Multiple containers and Tenant database, enter the name of tenant database, and then click Next.

      As a result, you can see two systems the Systems list. One is the system database (for example, SYSTEMDB@HDB(SYSTEM)) and the other is the tenant database (for example, DEV@HDB(SYSTEM)).
   3. Double-click the system of system database (for example, SYSTEMDB@HDB(SYSTEM)). On the Configuration tab, choose webdispatcher.ini → profile → wdisp/system_auto_configuration and set the default value to **`true`**.
2. Log on to the SLD control center.

   On the Services tab, copy the link of App Framework. Normally, the URL is **`https://<Server Name>:43xx`** (where "xx" represents the SAP HANA instance number). For example, **`https://abchcd50500:4301`**.

   Caution

   Copy the hostname of the server instead of the IP address
3. In the SAP HANA Studio, do the following:
   1. Double-click the tenant database (for example, DEV@HDB(SYSTEM)).
   2. On the Configuration tab, choose xsengine.ini→ public_urls→ https_url and paste the URL which is copied in step 2 (for example, **`https://abchcd50500:4301`**) to the system value.

      You can also choose xsengine.ini→ public_urls→ http_url and enter **`http://<Server Name>:80xx`** (where "xx" represents the SAP HANA instance number) in the system value.

      Example

      You copied **`https://abchcd50500:4301`** in step 2. Then, on the Configuration tab, you choose xsengine.ini→ public_urls→ http_url and enter **`http://abchcd50500:8001`** in the system value.

For more information, see Configure HTTP(S) Access to Multitenant Database Containers on SAP Help Portal.

7.2.5 Service Layer

After the installation, to start working with the Service Layer, ensure that the SBOCOMMON schema and your company schema are installed or upgraded to the same version. In addition, the SAP HANA database user used for connection must have the following SQL object privileges:

- SBOCOMMON schema: **`SELECT`**, **`INSERT`**, **`DELETE`**, **`UPDATE`**, **`EXECUTE`** (all grantable)
- Company schema: Full privileges

  Note

  On the Services tab in the system landscape directory, make sure that the Service Layer is already bound to a database instance which is registered on the SLD control center.

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7.2.6 SBO DI Server

This optional service enables multiple clients to access and manipulate the SAP HANA database. To use it, you are required to have a special license.

For more information, see the SDK Help Center.

7.2.7 SAP Business One Workflow

The workflow service enables you to standardize your business operations to increase overall efficiency. With predefined conditions, the system automatically executes various tasks, liberating labor resources for more creative activities.

For more information, see How to Configure the Workflow Service and Design the Workflow Process Templates at SAP Help Portal. The guide includes samples and additional reference materials.

7.2.8 Web Client

After the installation, to start working with the Web Client on Windows, ensure that you set Google Chrome or Mozilla Firefox as your default Web browser. If your devices are Windows domain-joined, we recommend that the administrator centrally set the default browser using Group Policy, as follows:

1. According to the Web browser you intend to use, create and store a default application association XML file locally or on a network share.
   - For Google Chrome

```
<?xml version="1.0" encoding="UTF-8"?>
<DefaultAssociations>
  <Association Identifier=".htm" ProgId="ChromeHTML" ApplicationName="Google Chrome" />
  <Association Identifier=".html" ProgId="ChromeHTML" ApplicationName="Google Chrome" />
  <Association Identifier="http" ProgId="ChromeHTML" ApplicationName="Google Chrome" />
  <Association Identifier="https" ProgId="ChromeHTML" ApplicationName="Google Chrome" />
</DefaultAssociations>
```

   - For Mozilla Firefox

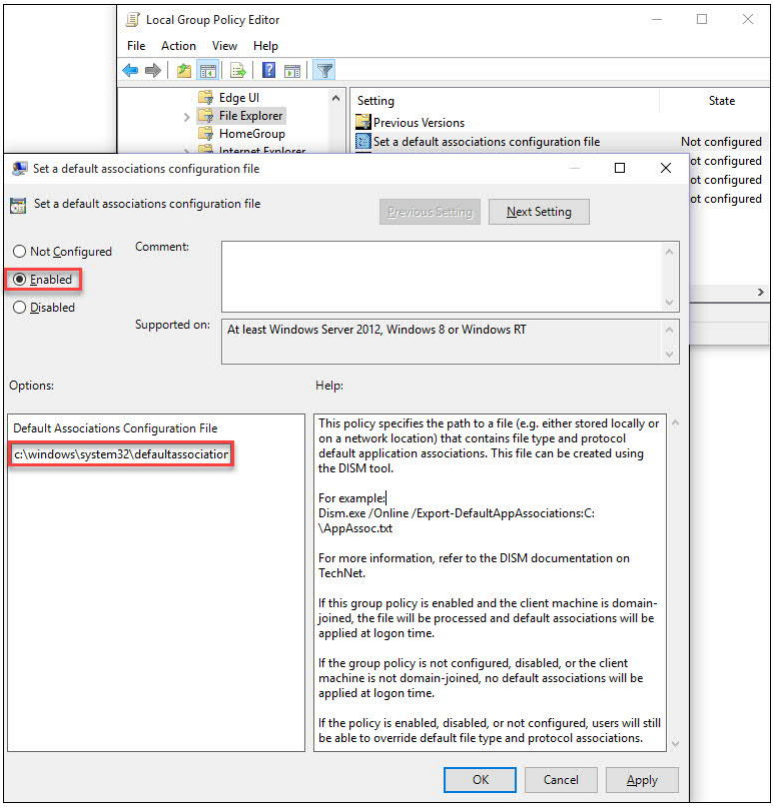
```
<?xml version="1.0" encoding="UTF-8"?>
<DefaultAssociations>
<Association Identifier=".htm" ProgId="FirefoxHTML" ApplicationName="Firefox" />
<Association Identifier=".html" ProgId="FirefoxHTML" ApplicationName="Firefox" />
<Association Identifier="http" ProgId="FirefoxHTML" ApplicationName="Firefox" />
```


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```
<Association Identifier="https" ProgId="FirefoxHTML" ApplicationName="Firefox"
/>
</DefaultAssociations>
```

2. Set the default browser using Group Policy:
    1. Open your Group Policy editor and go to the setting: `Computer Configuration\Administrative Templates\Windows Components\File Explorer\Set a default associations configuration file`.
    2. Click Enabled, and then in the Options area, enter the location to your default associations configuration file.

       If this setting is turned on and one device is domain-joined, this file is processed, and default associations are applied at logon. If this setting is not configured or is turned off, or if a device is not domain-joined, no default associations are applied at logon.



On each Windows machine, you can individually change the default browser under Settings → Default apps → Web browser.

7.3 Deploying Demo Databases

Demonstration (Demo) databases include transactional data for your testing.

As of release 10.0 FP 2102, if you want to install demo databases, you need to download the demo database zip files from the SAP Help Portal and then manually import them to SAP Business One.

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This section provides information about how to restore the demo databases (schemas) in SAP Business One, version for SAP HANA.

Prerequisites

- You have installed SAP Business One FP 2102, version for SAP HANA or higher.
- You have installed the SAP HANA application with a required SAP HANA revision. For more information about required SAP HANA revisions, see SAP Note 2826199.
- You have installed SAP HANA Studio.
- You have downloaded the demo databases as *.zip files from the SAP Help Portal at https://help.sap.com/doc/1660bf9ea40a46e1916736665d024dc6/10.0/en-US/B1_Demo_Databases_Overview.pdf and copy the files to the Linux machine on which SAP HANA server is installed.
- On the Linux server, you have extracted the zip files to a directory.

  Note

  Make ensure that the directory permission for `Other` is at lease Read and Execute (for example, the octal value is 755).

  You can set the directory permission by running the following command:

  ```
  chmod - R 755 / <Directory Path>
  ```

Procedure

1. Open SAP HANA Studio and connect to the SAP HANA database server.
2. Ensure that the user name used in SAP HANA Studio is the same one that is used for the SAP Business One Server installation.
3. Check if the schema SBOCOMMON is available in the Catalog. Otherwise, in the System list, right-click a blank space and choose Add System with Different User....
4. If the Catalog of the selected SAP HANA database user contains the SBOCOMMON schema, open the SQL console.
5. Run the following query to import a demo database:

   ```
   Import "<Demo Database Name>"."*" as binary from '<Directory of the Extracted Demo Database>' with ignore existing
   ```

   Alternatively, you can also rename the database during the import by using the following query:

   ```
   Import "<Demo Database Name>"."*" as binary from '<Directory of the Extracted Demo Database>' with ignore existing
   Rename SCHEMA "<Demo Database Name >" to "<Demo Database New Name >
   ```


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7.4 Initializing and Maintaining Company Schemas for Analytical Features

This section provides information about checking and maintaining your company schemas for the analytical features powered by SAP HANA.

To avoid disrupting customers' daily business activities in SAP Business One, version for SAP HANA, the application provides a Web-based Administration Console that can be used to initialize and maintain company schemas on the SAP HANA database server.

> **Note**
>
> For more information about system administration and maintenance of SAP HANA, see SAP HAHA database administration guides on SAP Help Portal at https://help.sap.com/hana_platform.

7.4.1 Starting the Administration Console

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

Procedure

1. In a web browser, navigate to the following URL:

   `https://<Server Address>:<Port>/Enablement`

2. In the logon page, enter the site user name and password, and choose Log On.

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

Section	Description
SAP HANA Server Statistics	Displays SAP HANA database server information. When the memory usage or disk volume usage reaches 90% or more, the status bar turns from blue to red. We recommend that you release some memory or disk space when you see the warning. **Caution** If you have changed the password of the `COMMON` user that is exclusively used by the analytics platform to connect to the SAP HANA database, you must update the password accordingly in the Administration Console, as follows: 1. Update the password by choosing Change Password. 2. Stop and restart SAP Business One analytics powered by SAP HANA. For more information, see the section "Restarting SAP Business One Services on Linux" in Troubleshooting.
License	Displays the license server information.

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Section	Description
Company Overview	Displays the following information: • Number of companies • Number of initialized company schemas • Number of company schemas for which you have scheduled data staging

7.4.2 Initializing and Updating Company Schemas

To use functions provided by SAP Business One analytics powered by SAP HANA in your SAP Business One companies (for example, enterprise search, SAP HANA models, real-time dashboards, Excel Report and Interactive Analysis, and SAP Crystal Reports), you need to initialize or update company schemas in the Administration Console, depending on the specific scenarios, as listed in the table below:

Operation	Function	Scenario
Initialization	Deploys various analytical contents to your company (for example, models, Crystal reports, and dashboards), and prepares the company for data staging.	Required in either of the following situations: • The status of your company is `New`. • You have reinstalled SAP Business One analytics powered by SAP HANA.
Update	Updates your company with analytical contents while maintaining all customized contents and settings. **Note** Update is possible only for companies that have already been initialized.	Required in either of the following situations: • Your company status changes to `Update Required`, usually because you have upgraded the SAP Business One system and the analytical contents have changed. • You want to change the model language.
Reinitialization	Redeploys analytical contents to your company and erases all customized contents and settings.	Required in either of the following situations: • Several update attempts have failed. • The status of your company changes to `Reinitialization Required`, explicitly requesting you to reinitialize the analytical contents of your company.

Note

The initialization process also deploys the specified language version of predefined SAP HANA models. For more information about deploying SAP HANA models, see the online help of SAP Business One, version for SAP HANA.

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Prerequisite

If third-party models or procedures in your company schema reference retired views or ETL tables, before you perform initialization or update on the schema, ensure either of the following:

- The staging compatibility mode is on, which is the default mode for upgraded companies.
- If the staging compatibility mode is off, you have removed the dependencies of third-party models or procedures on retired views or ETL tables.

For more information, see SAP Note 2000521 (retirement progress) and Staging Compatibility Mode.

> **Note**
>
> Before all ETL tables are removed, data staging is still required because some system views are still based on ETL tables.

Initializing Company Schemas

The following procedure describes how to initialize a company schema.

1. Log on to the Administration Console. For more information, see Starting the Administration Console.
2. On the Companies tab, click the company schema that you want to initialize.

   The company page for the company you have chosen is displayed.
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, make the change directly in the Administration Console and then update the company (by choosing Update) to apply the change.
   >
   > Different language versions of a model cannot coexist. Whichever way you choose to change the model language, the previous language version is overwritten.
4. Choose Initialize.
5. In the confirmation message box, choose Yes.

   > **Note**
   >
   > The initialization process may take some time, depending on the size of the schema.

   > **Note**
   >
   > The system performs some checks before starting the initialization. Each check must have 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 object is SYSTEM, or SYS, or begins with _SYS_.	No

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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: TABLE, TYPE, SEQUENCE, PROCEDURE, FUNCTION, INDEX, VIEW, MONITOREVIEW, SYSNONYM, and TRIGGER.	No

Result

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.

Updating or Reinitializing Company Schemas

After you initialize a company schema, the Initialize button changes to Update. You may update the analytical contents for your company, depending on your needs.

In some exceptional cases, the update may not succeed, and you must reinitialize your company schema. However, compared with a relatively light-weight update, reinitialization removes all customized contents and settings; therefore, we strongly recommend that you do not attempt reinitialization unless necessary. In addition, although update is a comparatively light operation, data staging is stopped during the update and it may also bring about disruption to your daily work; therefore, we also recommend that you perform update during off hours.

If reinitialization is required for a company, then on the corresponding company page in the Administration Console, choose  and then choose Re-initialize from the dropdown list to perform reinitialization.

Result

If your company was in the process of data staging before the update or reinitialization, data staging is automatically resumed after the update or reinitialization is complete.

7.4.2.1 Staging Compatibility Mode

While the data staging function facilitates the use of data for analytical purposes, it slows down transactions on the database and impacts system performance. With higher versions of SAP HANA, the performance of OLAP views has significantly improved; analytics with data in memory is as efficient as with staged data. Therefore, SAP Business One intends to phase out the data staging function and remove the related ETL tables (tables whose names start with "ETL_", representing "extract, transform, and load") and views. For more information about the retirement progress, see SAP Note 2000521.

As partners may have built models and stored procedures based on the removed ETL tables or views, you can enable the staging compatibility mode to temporarily work on old ETL tables and views; after your partners have rebuilt the models or procedures, you can disable the staging compatibility mode and start to work with redesigned analytics functions, taking advantage of more powerful new views and other features. By default, the staging compatibility mode is:

- Kept as is for initialized companies which are upgraded from lower versions

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- Off for upgraded but not initialized companies
- Off for new companies

Procedure

To enable or disable the staging compatibility mode, do the following:

1. Log on to the Administration Console. For more information, see Starting the Administration Console.
2. On the Companies tab, click the company for which you want to turn on the staging compatibility mode.
   The company page for the company you have chosen is displayed.
3. On the company page, choose  and then in the dropdown list, choose Compatibility Mode.
4. The Staging Compatibility Mode Configuration window displays the following options:
   - On: Enables the staging compatibility mode
   - Off: Disables the staging compatibility mode

   To change the current setting of the company, select the relevant radio button and then choose Update.
5. To exit the window, choose OK.

Results

The company schema is initialized or updated. The analytical contents in the company schema are updated, as below:

- If you turned off the compatibility mode:
  - New views are deployed to your company.
  - Retired ETL tables and related resources are removed from the database.

    Note

    If third-party models or procedures still reference the retired ETL tables or views, initialization or update will fail. However, the compatibility mode remains off. For more information, see Initializing and Updating Company Schemas.

    When the compatibility mode is off, some third-party pervasive dashboards may stop working because their data sources include retired views. However, company schema initialization or update will succeed. In this case, you must redesign the pervasive dashboards or turn on the compatibility mode again.
- If you turned on the compatibility mode:
  - Retired ETL tables and related resources (for example, lower versions of pre-defined models) are deployed to your company.
  - New views still exist in the database.

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7.4.3 Scheduling Data Staging

Data staging gathers data from the SAP HANA database for better and faster utilization of the data in Excel Report and Interactive Analysis. For more information about Excel Report and Interactive Analysis, see the online help of SAP Business One, version for SAP HANA.

The data staging automatically starts when you initialize the company schema. However, if you want to stop the data staging for faster performance in the back-end, you can stop the service at any time.

> **Note**
>
> When data staging is in progress, you may lose connection to the SAP HANA server for various reasons; for example, if the SAP HANA server is restarted. In such cases, the data staging service repeatedly attempts to reconnect to the SAP HANA server within a defined period of time (4 hours by default). If the SAP HANA server is reconnected within that period of time, the data staging service will continue gathering the unfinished data; if the SAP HANA server remains unreachable after that period of time, the data staging service is stopped. For more information, see Configuring Data Staging Service Parameters.

You can start, stop, and schedule the data staging function in the Administration Console.

Procedure

1. Log on to the Administration Console. For more information, see Starting the Administration Console.
2. Go to the Companies tab and click the company for which you want to schedule data staging.
3. In the Data Staging Schedule section, do one of the following:
   - If you want to stage data in near real time, select the Real-time Data Staging radio button.
   - If you want to stage data at regular intervals, select the Scheduled Data Staging 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 data staging starts every day.
4. To apply your settings and start the schedule, choose Start. If later you want to stop the data staging service, choose Stop.

Result

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

7.4.3.1 Configuring Data Staging Service Parameters

In case of errors, the data staging service attempts to resume data staging within a certain period of time. This section describes how to change the duration and frequency of retry attempts.

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Caution

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

By default, the configuration file `StagingConfig.xml` is located under `/usr/sap/SAPBusinessOne/AnalyticsPlatform/Conf`.

Note

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

secondsToRetryForStagingCycleFailure

Purpose

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

Use Case

You want the restarting attempts to be more frequent or less frequent.

Valid Value

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

Default value: `10`

minutesToStopForStagingCycleFailure

Purpose

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

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

For more information, see the section “secondsToRetryForStagingCycleFailure”.

Use Case

You want a longer or shorter duration for restarting attempts.

Valid Value

Zero or a positive integer.

Default value: `240`

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7.4.4 Assigning UDFs to Semantic Layer Views

You can make user-defined fields (UDFs) available in semantic layer views directly in the Administration Console. This method has two advantages:

- You do not have to make the assignments in each view in the SAP HANA studio.
- If you assign a UDF to a view, you must also assign the UDF to all views that are referenced by this view. With this new feature, you only need to assign UDFs to the top-level query views (names of which end with "`Query`") and the UDFs are automatically assigned to all referencing views.
- For information about the prerequisites for consuming UDFs in Excel Report and Interactive Analysis, see SAP Note 2168402.

Prerequisites

- The UDFs available for configuration meet the following requirements:
  - The UDFs are added to system tables, not to user-defined tables.
  - Each UDF title contains only English letters (a-z/A-Z), numbers (0-9), and underscores.
- You have initialized the company for which you want to configure UDF availability in the semantic layers. In other words, the status of the company schema must be `Initialized`.

Procedure

1. Log on to the Administration Console. For more information, see Starting the Administration Console.
2. Go to the Companies tab and click the company for which you want to configure UDF availability in the semantic layers.
3. On the company page, choose  and then in the dropdown list, choose UDF Configuration.

   The UDF Configuration in Semantic Layer window opens and displays only the categories (business objects) which contain UDFs.
4. To assign a UDF to the semantic layers, do the following:
   1. In the left pane of the window, select the UDF row.

      The right pane displays the relevant views. These views include only system query views.
   2. Select the corresponding Assign checkbox.
   3. If the UDF is a numeric value, in the right pane, do the following:
      1. Define its type in a view: measure or attribute.
      2. If you define it as a measure, define its aggregation type.
      3. Repeat the above steps for each view.

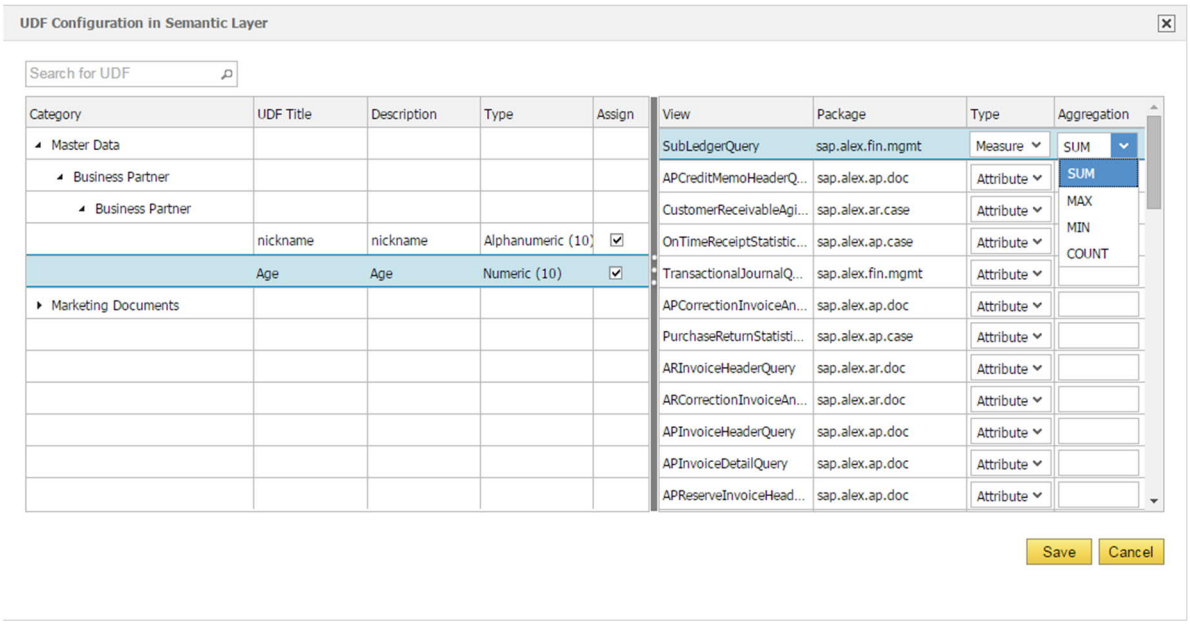
      Recommendation

      If the UDF is in a header table, define it as an attribute in line views (names of which contain the word "`Detail`", for example, `APReserveInvoiceDetailQuery`).

      Note

      If the UDF is not a numeric value, it can be used only as an attribute.

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5. To save the configurations, choose Save.

   > **Note**
   >
   > If another conflicting process (for example, UDF configuration, reinitialization or update) is already ongoing in this company, you must wait until the other process is complete.

6. Wait for the configuration to complete. The time may vary from a few minutes to much longer depending on various factors such as the number of UDFs to be assigned.

Results

Configuration in Progress

While waiting for the configuration to complete, you cannot perform other tasks on this company schema which conflict with the configuration. For example, you cannot reinitialize or update the company schema until the configuration is complete. We recommend the following:

- Keep the browser tab with the Configuration Progress window open.

  This not only ensures that you can track the configuration progress, but also ensures that you can revert the changes in case of a configuration failure. If you have closed the Configuration Progress window, you can only check the company log to determine the configuration result.
- If you need to perform tasks on other company schemas, open a new Web browser or browser tab.
- Do not run the UDF configuration process on many company schemas simultaneously because configurations on the semantic layers usually consume a fair amount of SAP HANA resources.

Configuration Failed

If the configuration process encounters an error, the process stops at the first failed assignment. If you have kept the Configuration Progress window open, you can reverse the changes that have already been made. The reversion not only removes the previous successful assignments (or unassignments), but also ensures no view is negatively impacted by the failure.

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If you have already closed the Configuration Progress window, you are not able to reverse the changes, and the successful assignments (or unassignments) are kept. The query view which failed the assignment, as well as the views referencing this query view, cannot be properly consumed.



Example

A UDF has been added to the business partner object. There are two relevant views. When you attempt to assign the UDF to the semantic layers, the configuration encounters an error and fails the assignment to the second view.

If you do not reverse the changes, the UDF is still assigned to the first view. As the second assignment may be partly made, the second view, as well as the views that reference the second view, may not be properly consumed.

Configuration Completed

After assigning a UDF to the semantic layers, the results are as below:

- You can include the UDF in the relevant query views as well as in views which reference those views.
- The technical name of the UDF is the UDF title with a set prefix. For more information about the prefixes, see How to Work with Semantic Layers on SAP Help Portal.
- If you later remove the UDF from the company schema in the SAP Business One client application, you must clean up the relevant views to remove the assignment.

  In the UDF Configuration in Semantic Layer window, a new Clean Up button becomes available. After you choose this button, the UDF is unassigned from both the relevant query views and the views which reference the query views.

  If you do not perform the cleanup, the following consequences may occur:
  - If a tool or report consumes these views (query views and referencing views), the tool or report cannot work properly.
  - You may fail with new UDF configurations.
  - Note that the restart of SAP Business One Browser Access Server Gatekeeper service may take from 5 to 10 minutes. For more information, see SAP Note 2198134.

7.5 Enabling External Access to SAP Business One Services

The SAP Business One Browser Access service, integration framework, mobile service, analytics service and Web Client help you to use SAP Business One outside your corporate networks. For secure access, you must be sure to do the following:

1. Use an appropriate method to handle external requests.
2. Use valid certificates to install relevant SAP Business One services.
3. Assign an external address to each relevant SAP Business One service.
4. Build proper mapping between the external addresses and the internal addresses.

Alternatively, you can use Citrix or similar solutions for external access. These third-party solutions are not covered in this guide.

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7.5.1 Choosing a Method to Handle External Requests

As the Browser Access service, integration framework, mobile service, analytics service and Web Client enables you to access SAP Business One from external networks, it is essential that external requests can be sent properly to internal services.

To handle external requests, we recommend deploying a reverse proxy rather than using NAT/PAT (Network Address Translation/Port Address Translation). Compared with NAT/PTA, the reverse proxy is more flexible and can filter incoming requests.

> **Note**
>
> Regardless of the method, the database services are not exposed to external networks; only the SAP Business One services are exposed. However, you must never directly assign an external IP address to any server with SAP Business One components installed.
>
> To improve your landscape security, you can install your SAP database server on a machine other than the one holding SAP Business One components.

Reverse Proxy

A reverse proxy works as an interchange between internal SAP Business One services and external clients. All the external clients send requests to the reverse proxy and the reverse proxy forwards their requests to the internal SAP Business One services.

To use a reverse proxy to handle incoming external requests, you need to:

1. Import a trusted root certificate for all SAP Business One services during the installation.

   The certificate can be issued by a third-party certification authority (CA) or a local enterprise CA. For instructions on setting up a local certification authority to issue internal certificates, see Microsoft documentation.

   All the components (including the reverse proxy) in the SAP Business One landscape should trust the root CA which issued the internal certificate for all SAP Business One services.

2. Purchase a certificate from a third-party public CA and import the certificate to the reverse proxy server.

   Note that this certificate must be different from the first certificate. While the first certificate allows the reverse proxy to trust the CA and, in turn, the SAP Business One services, the second certificate allows the reverse proxy to be trusted by external clients.

   All clients from external networks naturally trust the public CA and, in turn, the reverse proxy. A chain of trust is thus established from the internal SAP Business One services, to the reverse proxy, and to the external clients.

NAT/PAT

If you prefer NAT/PAT to a reverse proxy, be aware that all clients connect directly to the internal SAP Business One services, external clients and internal clients alike.

To use NAT/PAT, you must purchase a certificate from a third-party CA and import the certificate to all machines installed with SAP Business One services. All the clients must trust this third-party public CA.

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7.5.2 Preparing Certificates for HTTPS Services

Any service listening on HTTPS needs a valid PKCS12 (.pfx) certificate to function properly, especially for external access using the Browser Access service.

How you prepare PKCS12 (.pfx) certificates depends on how you plan to expose your SAP Business One services (including the Browser Access service) to the Internet (external networks).

When preparing the certificates, pay attention to the following points:

- Ensure the entire certificate chain is included in the certificates.
- To streamline certificate management, set up a wildcard DNS (*.DomainName).
- The public key must be a 2048-bit RSA key.

  Note that JAVA does not support 4096-bit RSA keys and 1024 bits are no longer secure.

  Alternatively, you can use 256-bit ECDH keys, but RSA-2048 is recommended.
- The signature hash algorithm must be at least SHA-2 (for example, SHA256).

Reverse proxy (recommended)

For a reverse proxy, prepare an internal certificate for the internal domain and import the internal root certificate to all Windows servers. Then purchase for the external domain another external certificate issued by a third-party CA and import this certificate to the reverse proxy server.

NAT/PAT

If you use NAT/PAT to handle external client requests, purchase a certificate issued by a third-party CA for both internal and external domains.

If the internal and external domains have different names, this certificate should list both domains in the Subject Alternative Name field. However, we recommend that you use the same domain name for both internal and external domains.

7.5.3 Preparing External Addresses

To expose your SAP Business One services to the Internet (external networks), you must prepare external addresses for relevant components.

> **Note**
>
> The Service Layer is for internal component calls only and you do not need to expose it to the Internet.

Please pay attention to the following points:

- The external address and the internal address of each component must be different; otherwise, the external networks cannot be distinguished from the internal network, making browser access impossible.
- Only one set of external addresses is supported. Communication via the DNS alias of an external address will lead to error.

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7.5.3.1 Reverse Proxy Mode

If you intend to handle client requests using a reverse proxy, we recommend that you use different domain names for internal and external domains. For example, the internal domain is abc.corp and the external domain is def.com.

Prepare the external addresses as follows:

- Prepare one external address (hostname or IP address) for each of these components:
  - System Landscape Directory (SLD)
  - Browser Access service
  - Analytics service
  - Integration framework (if you use the SAP Business One mobile solution)
  - Mobile service
  - Web Client for SAP Business One
- The internal address of each component must match the common name of the certificate for the internal domain; the external address of each component must match the common name of the purchased certificate for the external domain.

  Example

  The internal URLs of the components are as follows:
  - System Landscape Directory: https://SLDInternalAddress.abc.corp:Port
  - Browser Access service: https://BASInternalAddress.abc.corp:Port/dispatcher
  - Analytics service: https://B1AInternalAddress.abc.corp:Port/Enablement
  - Integration framework: https://B1iInternalAddress.abc.corp:Port/B1iXcellerator
  - Mobile service: https://MobileServiceInternalAddress.abc.corp:Port/mobileservice
  - Web Client for SAP Business One: https://WebClientsInternalAddress.abc.corp:Port

  The external URLs are as follows:
  - System Landscape Directory: https://SLDExternalAddress.def.com:Port
  - Browser Access service: https://BASExternalAddress.def.com:Port/dispatcher
  - Analytics service: https://B1AExternalAddress.def.com:Port/Enablement
  - Integration framework://B1iExternalAddress.def.com:Port/B1iXcellerator
  - Mobile service: https://MobileServiceExternalAddress.abc.corp:Port/mobileservice
  - Web Client for SAP Business One: https://WebClientsExternalAddress.def.com:Port

You can configure a nginx reverse proxy by performing the following steps:

Prerequisites

- You have predefined an external domain name for the SLD (System Landscape Directory) and other components. For example, ExternalAddress.def.com.
- You have obtained the nginx_conf OP.zip file (download it from here).

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Procedure

1. From http://nginx.org/, download the nginx binary file according to your target operating system and extract the binary file to a local folder.

   The recommended nginx version is 1.8.0 or higher.

2. Install nginx on a Windows server or a Linux server.

   Note that only version 9.2 PL03 and above support nginx installed on Linux servers. In addition, you must ensure that OpenSSL is enabled.

3. Copy some SLD files to the nginx server:
   1. On the nginx server, under the ${nginx}\html\ folder, create a folder named as ControlCenter.
   2. On the SLD server, go to ${SLDInstallationFolder}/ServerTools/SLD/webapps, get the SLDControlCenter.war file.
   3. Copy and unzip the SLDControlCenter.war file to ${nginx}\html\ControlCenter.
4. Prepare certificates:
   1. Generate the server.cer and server.key files from your PKCS12 (.pfx) file using the OpenSSL library.
   2. Copy both files to the ${nginx}/cert folder.

      If the cert folder does not already exist, create it manually.
5. Copy the nginx_conf OP.zip file to the ${nginx}/conf folder and extract the content. Override any existing content, if necessary.

   If you use Windows servers for nginx, please comment out ssl_session_cache shared:WEB:10m; in the nginx.conf file.

```
44      ssl_certificate      ../cert/server.cer;
45      ssl_certificate_key  ../cert/server.key;
46      ssl_session_timeout   10m;
47      #ssl_session_cache shared:WEB:10m;
48      ssl_ciphers ECDHE-RSA-AES256-SHA384:AES256-SHA256:RC4:HIGH:!MD5:!aNULL:!EDH:!AESGCM;
49      ssl_prefer_server_ciphers  on;
50      ssl_protocols TLSv1 TLSv1.1 TLSv1.2;
51
```

6. Configure the service addresses:
   1. Open the b1c_extAddress.conf file for editing.
   2. To specify the internal address and port of each component, modify the Component Configuration section.

```
#================== external access proxy configuration begins =========

#Component configuration
upstream SLDService{
  server   <IP Address>   :40000;
}


upstream BASService {
 server   <IP Address>   :8100;
}

upstream AnalyticService {
 server   <IP Address>      :40000;
}

upstream BliService {
 server <IP Address> :8443;
}

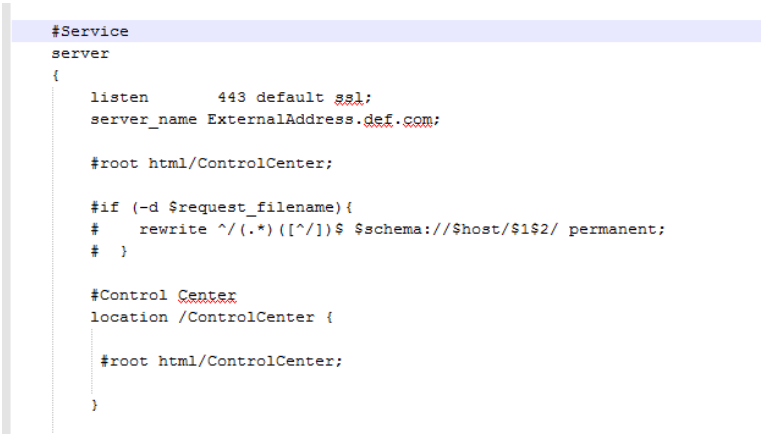
upstream MobileService{
 server   <IP Address>      :40000;
}


upstream WebClient{
 server   <IP Address>      :443;
}
```


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3. To configure an external domain name for the components, modify the Server information in the b1c_extAddress.conf file.

   Note that you must ensure the domain name is bound to the public IP address of this nginx server.



```
#Service
server
{
    listen       443 default ssl;
    server_name ExternalAddress.def.com;

    #root html/ControlCenter;

    #if (-d $request_filename){
    #    rewrite ^/(.*)([^/])$ $schema://$host/$1$2/ permanent;
    #  }

    #Control Center
    location /ControlCenter {

     #root html/ControlCenter;

    }
```

7. Go to `${nginx}/sbin` and start the nginx server.

Results

Example

The external addresses of the SLD and the other components are as follows:

- System Landscape Directory: https://ExternalAddress.def.com:443
- Browser Access service: https://ExternalAddress.def.com:443/dispatcher
- Analytics service: https:// ExternalAddress.def.com:443/Enablement
- Integration framework: https://ExternalAddress.def.com:443/B1iService
- Mobile service: https://ExternalAddress.def.com:443/mobileservice
- Web Client for SAP Business One : https://ExternalAddress.def.com:443

7.5.3.2 NAT/PAT

If you intend to handle client requests using NAT/PAT, we recommend that you use the same domain name across internal and external networks. For example, both the internal and external domains are abc.com.

Prepare the external addresses as follows:

- Prepare one external address (hostname or IP address) for each of these components:
  - System Landscape Directory (SLD)
  - Browser Access service
  - Analytics service
  - Integration framework (if you use the SAP Business One mobile solution)
  - Mobile service

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- Web Client for SAP Business One

- The combination of external address and port must be different for these components. In other words, if two components have the same external address, the ports they listen on must be different; and vice versa.
- The internal address and external address of each component must match the common name of the certificate purchased for both the internal and external domains.

  Example

  The internal URLs of the components are as follows:

  - System Landscape Directory: https://SLDInternalAddress.abc.com:Port
  - Browser Access service: https://BASInternalAddress.abc.com:Port/dispatcher
  - Analytics service: https://B1AInternalAddress.abc.com:Port/Enablement
  - Integration framework: https://B1iInternalAddress.abc.com:Port/B1iXcellerator
  - Mobile service: https://MobileServiceInternalAddress.abc.corp:Port/mobileservice
  - Web Client for SAP Business One: https://WebClientsInternalAddress.abc.corp:Port

  The external URLs are as follows:

  - System Landscape Directory: https://SLDExternalAddress.abc.com:Port
  - Browser Access service: https://BASExternalAddress.abc.com:Port/dispatcher
  - Analytics service: https://B1AExternalAddress.abc.com:Port/Enablement
  - Integration framework: https://B1iExternalAddress.abc.com:Port/B1iXcellerator
  - Mobile service: https://MobileServiceExternalAddress.abc.corp:Port/mobileservice
  - Web Client for SAP Business One: https://WebClientsExternalAddress.abc.corp:Port

7.5.4 Configuring Browser Access Service

The Browser Access service enables remote access to the SAP Business One client in a Web browser. The Windows service name is SAP `Business One Browser Access Server Gatekeeper`.

Prerequisite

Ensure that the date and time on the Browser Access server is synchronized with the database server.

Procedure

1. In a Web browser, log on to the System Landscape Directory control center using this URL: **`https://<Hostname>:<Port>/ControlCenter`**.
2. On the Services tab, select the Browser Access entry for the particular Browser Access server and then choose Edit.
3. In the Edit Service window, edit the following information:
   - Service URL: Edit the URL used to access the service.

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For example, you may want to use the IP address instead of the hostname. Or the hostname, IP address, or the port has changed and you must update the service URL to reflect the changes.

- Initial Processes: Specify the initial number of SAP Business One client processes that the Browser Access service hosts.
- Maximum Processes: Specify the maximum number of SAP Business One client processes that the Browser Access service can host.
- Idle Processes: Specify the number of standby SAP Business One client processes. When a new SAP Business One user attempts to log on, an idle process is ready for use.
- Description: Enter a description for this Browser Access server.



Example

Specify the following:

- Initial processes: 20
- Maximum processes: 100
- Idle processes: 2

Twenty (20) SAP Business One client processes are constantly running on the Browser Access server and allow 20 SAP Business One users to access the SAP Business One client in a Web browser at the same time.

When the 19th SAP Business One user logs on, one (1) more SAP Business One process is started to ensure that two (2) idle processes are always running in the background.

If more SAP Business One users attempt to access the SAP Business One client in a Web browser, more idle processes are started, but at most, 100 users are allowed for concurrent access.

4. To save the changes, choose OK.
5. To apply the changes immediately, on the Browser Access server, restart the SAP Business One Browser Access Server Gatekeeper service.

7.5.5 Mapping External Addresses to Internal Addresses

You must register in the System Landscape Directory the mapping between the external address of each of the following components and its internal address:

- System Landscape Directory (SLD)
- Browser Access service
- Analytics service
- Mobile service (Mobile service is required only if you are using SAP Business One Sales app.)
- Web Client for SAP Business One

Note that you do not need to register the mapping for the integration framework.

For detailed instructions, see Mapping External Addresses to Internal Addresses.

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7.5.6 Accessing SAP Business One in a Web Browser

By default, no load balancing mechanism is applied. You can create a Web access portal and redirect requests to different Browser Access servers using a load balancing mechanism of your own choice, for example, round robin.

Prerequisites

- You have ensured that you can log on to the SAP Business One client installed on the Browser Access server.
- You are using one of the following Web browsers:
  - Mozilla Firefox
  - Google Chrome
  - Microsoft Edge

    Ensure that you have enabled Automatically Detect Intranet Network.
  - Apple Safari (Mac and IPad)

    Ensure that you have enabled Adobe Flash Player. This is a prerequisite for Crystal dashboards.

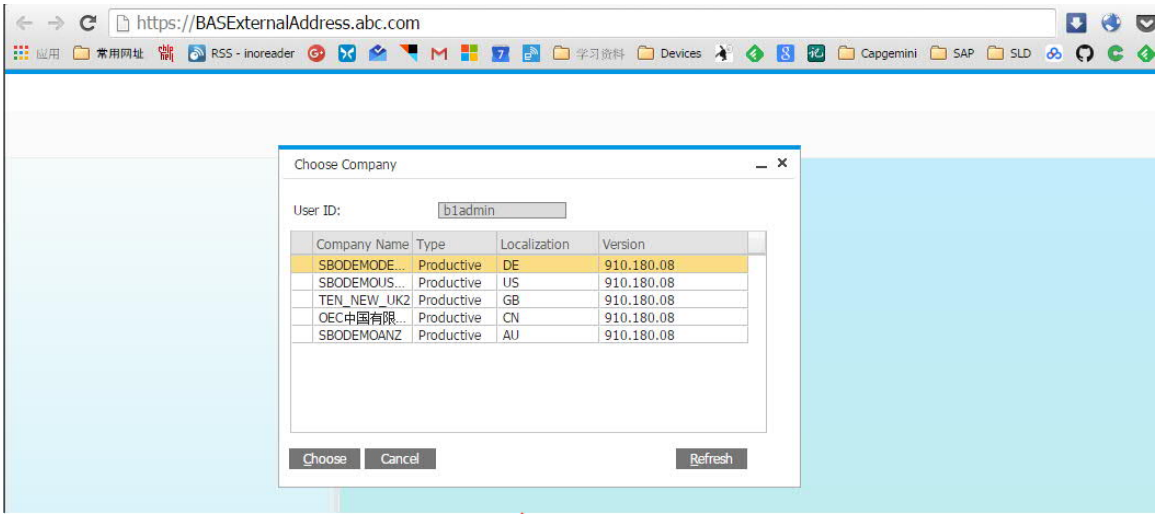
Procedure

The following procedure illustrates how to access SAP Business One directly in a Web browser.

1. In a Web browser, navigate to the external URL of the Browser Access service. For example: https://BASExternalAddress.abc.com:Port/dispatcher

   If you are uncertain about it, you can check the external address mapping in the SLD.

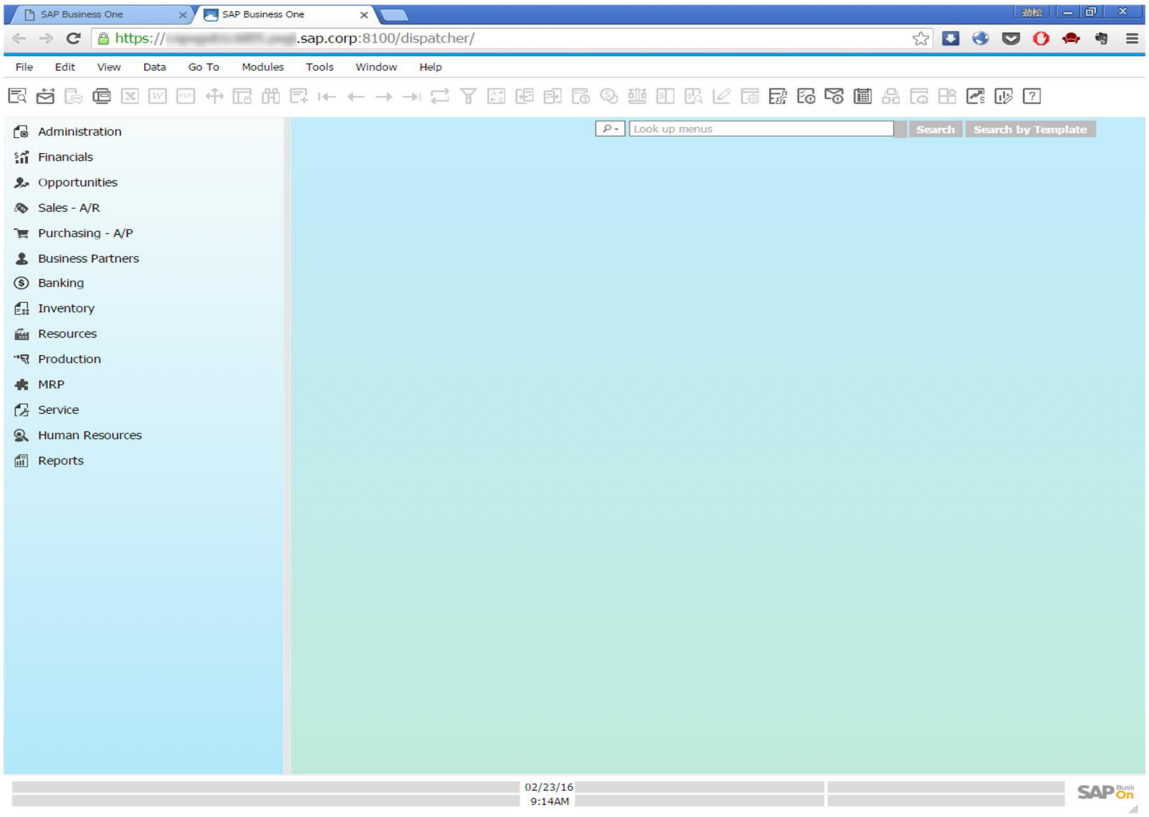
   The Browser Access page is opened.



2. Choose the company and log on.

   Now you can work with SAP Business One in your Web browser.

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7.5.7 Monitoring Browser Access Processes

You can monitor the Browser Access processes in a Web page using this URL: **`https://<dispatcherHostname>:<port>/serviceMonitor/`**.

7.5.8 Logging

The log files for the browser access service are stored at `<Installation Folder>\SAP Business One BAS GateKeeper\tomcat\logs`.

If you need to troubleshoot problems, edit the file `<Installation Folder>\SAP Business One BAS GateKeeper\tomcat\webapps\dispatcher\WEB-INF\classes\logback.xml`, and change the logging level from the default **`WARN`** to **`DEBUG`**. Note that you must change the logging level back to the default value after the investigation.

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7.6 Configuring the SAP Business One, version for SAP HANA Client

After you have installed SAP Business One, version for SAP HANA and logged on to the application for the first time, you are required to provide the license server address and port number in the License Server Selection window.

To start the SAP Business One, version for SAP HANA client, choose Start → All Programs → SAP Business One → SAP Business One Client. To start the SAP Business One, version for SAP HANA client using the command line, enter the following command:

```
“SAP Business One.exe" -DbServerType <SAP HANA Server version> -Server <SAP HANA Server instance name> -CompanyDB <Company Schema> -UserName <User ID> -Password <Password> -LicenseServer <License Server address:port>
```

For the `DbServerType` parameter, enter **9** for the SAP HANA database server.

> **Note**
>
> Command line parameters are case sensitive.

> **Caution**
>
> For security reasons, do not start the SAP Business One, version for SAP HANA client using the command line in productive environments. Use this method for testing only.

In the SAP Business One toolbar, you can check the log configurations by choosing Help → Support Desk → Logger Setting. You can see the relevant configuration log file under: …`\SAP\SAP Business One\Conf\b1LogConfig.xml`.

7.7 Assigning SAP Business One Add-Ons, version for SAP HANA

Add-ons are additional components or extensions for SAP Business One, version for SAP HANA. Installing the server and client applications automatically registers the SAP Business One add-ons and makes them available for installation from the SAP Business One application, version for SAP HANA. For more information about assigning SAP add-ons to your companies, see the Assigning Add-Ons section in the online help document.

The add-ons run under the SAP Add-Ons license, which is included in the Professional User license.

SAP Business One, version for SAP HANA provides the 64-bit add-ons as follows:

- Electronic File Manager
- Microsoft Outlook integration
- Payment Engine

> **Note**
>
> For more information about the Microsoft Outlook integration component, a standalone version of the Outlook integration feature, see Installing the Microsoft Outlook Integration Component (Standalone Version).

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The ELSTER Electronic Tax return add-on is available for download in the SAP Business One Software Download Center and is no longer included in the SAP Business One download package. For more information, see SAP Note 2064562.

Prerequisites

- You have a Professional User license provided by SAP.
- You have installed Microsoft XML 3.0 Service Pack 4 on your workstation. To ensure that this software is installed on the hard drive of the workstation, check that the `msxml3.dll` file is saved in the `system32` directory in the main Windows directory.
- If you have not included SAP add-ons in the installation of the SAP Business One server, you must register them in your workstations separately. For more information, see Registering Add-Ons in the online help documentation.
- You must have Power User or Administrative rights, especially in the terminal server environment.

The following table displays the SAP Business One add-ons, version for SAP HANA and their prerequisites.

Add-On	Prerequisites
DATEVF FI Interface	You have created a new company to work with the DATEV add-on and deselected the checkboxes: Copy User-Defined Fields and Tables and Copy User-Defined Objects. The DATEV add-on may not work with demo databases.
ELSTER Electronic Tax Return	Ensure that you have installed Microsoft Visual C++ 2008 SP1 Redistributable Package (x86). For more information, see www.microsoft.com. You can install it either before or after you install or upgrade the ELSTER Integration add-on.
Microsoft Outlook integration	• You have installed the 64-bit Microsoft Outlook on your workstation. Supported versions: 2000 SR1 and later, 2002, 2003, 2007, 2010, 2013, and 2016 • After installing Microsoft Outlook, you created an email account for sending and receiving emails. • Microsoft Outlook is set as your default mail client. After you install the Microsoft Outlook integration add-on, the SAP Business One entry appears in the Add-Ins menu of the following Microsoft Office applications: • Microsoft Outlook • Microsoft Word • Microsoft Excel For more information about how to use the feature, see the Microsoft Outlook integration online help. The help is available in the Add-Ins menu of the above Microsoft Office applications and from within the relevant windows in the SAP Business One client application (by pressing F1 in the windows).
Payment Engine	Inbound functionality is activated only when the Install Bank Statement Processing checkbox is deselected.

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7.8 Performing Post-Installation Activities for the Integration Framework

After installation is complete, you can begin using the integration framework. No mandatory post-installation activities are necessary.

However, for certain use cases, you need additional settings in the integration framework. The following sections provide information about additional configuration options and settings you can check to ensure a correct setup.

> **NOTE**
>
> The integration framework is implemented as a Microsoft Windows service with the SAP Business One Integration Service identifier. The service starts automatically after successful installation.
>
> If you cannot start the integration framework, stop and restart the service.
>
> You can locate the service by choosing Start → Control Panel → Administrative Tools → Services.

7.8.1 Maintaining Technical Settings in the Integration Framework

The integration framework is available as version 1 and version 2. When entering the IP address or host name and the port in the Web browser, a Web page opens and offers you to call either framework version 1 or 2.

The integration framework version 2 offers an Integrated Development Environment (IDE) for integration scenario design and enables you to deploy integration scenarios for more than one customer in cloud environments.

Procedure

1. In the Web browser, enter the IP address or host name and the port of the integration framework on the Web page, and click the integration framework version link.

   The Logon user interface opens.
2. In the Username field, enter **`B1iadmin`** and in the Password field, enter the password that was provided during installation.

   Note that entries in the Username field are case sensitive.
3. To add or change integration framework technical settings, in the integration framework, choose Maintenance.
   - To define proxy settings for your network and provide connection information for your email server, in framework version 1, choose Cfg Connectivity.

     In framework version 2, choose Configuration.
   - To get an overview about configuration information for message exchange between SAP Business One and the integration framework, and about integration packages setup, choose Tools → Troubleshooting, and in the Functional Group field, choose B1 Setup.

   For more information about maintenance functions, in the integration framework choose Help → Documents → Operations Part 2, section Framework Administration and Tools

   In framework version 2, choose Help → Documents → Operations

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7.8.2 Maintenance, Monitoring and Security

Monitoring

For technical monitoring purposes in framework version 1, enter the IP address or host name and the port; choose the framework version link.

- For framework version 1, choose Monitoring.

  You can use the message log, access the error inbox, display SAP Business One (B1) events and use other monitoring functions.

  By default, the message log is active after installation. We recommend deactivating the message log in a productive environment.

  For additional documentation, choose Help → Documents → Operations Part 1 and Operations Part 2.
- For framework version 2, choose Monitoring.

  You can use the transaction monitor, access the error inbox, the service monitor, scenario queue monitor, and so on.

  For additional documentation, choose Help → Documents → Operations

System Landscape Directory (SLD)

> **Note**
>
> Do not confuse the SLD for the integration framework with the SLD for the SAP Business One landscape, which you access from a Web browser. For more information, see Working with the System Landscape Directory.

Integration framework version 1 and 2 share the SLD. To maintain systems connecting to the integration framework, choose Start → All programs → Integration Framework for SAP Business One → Integration Framework, and then choose SLD.

For all integration packages, SAP delivers the necessary system entries in SLD.

In SLD, make sure that you keep the entry in the b1Server field for the SAP Business One system in sync with the entry in the associatedSrvIP field for the WsforMobile system.

Integration with SAP Business One integration for SAP NetWeaver

If your SAP Business One is connected as a subsidiary to the SAP Business One integration for SAP NetWeaver server, it is necessary to add entries to the event subscriber manually.

To configure the SAP Business One event subscriber to send events to a remote integration framework server, choose Start → All programs → Integration Framework for SAP Business One → Integration Framework, and then choose Maintenance → Cfg B1 Event Subscriber.

For more information, click the documentation (Book) icon in the function.

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Security Information

The integration framework security guide gives you information that explains how to implement a security policy and provides recommendations for meeting security demands for the integration framework.

For more information in framework version 1, enter the IP address or host name and the port, choose the framework version link, and choose Help → Documents → Operations: Performance, Security, Sizing section Security.

For framework version 2, choose Help → Documents → Operations: Performance and Security.

7.8.3 Technical B1i User

SAP Business One creates a user with the `B1i` user code for each company. The default process requires that you set the same password for each company. The integration framework uses the `B1i` user to connect to SAP Business One (for example, to check authentication when using the mobile solution). Ensure that the password that you provided during installation of the integration framework is the same you set in SAP Business One.

7.8.4 Licensing

Ensure that the SAP Business One `B1i` user has been assigned with the following two free licenses:

- B1iINDIRECT_MSS
- B1i

No additional licenses are required for the `B1i` user.

Mobile users must be licensed to access the SAP Business One system through the mobile channel. License administration is integrated with the SAP Business One user and license.

7.8.5 Assigning More Random-Access Memory (RAM)

We recommend checking the performance aspects in the related documentation.

Choose Start → All programs → Integration Framework for SAP Business One → Integration Framework, and then choose Help → Documents → Operations: Performance and Security.

If you expect your system to run under very high load and to process many messages, you can assign more random-access memory (RAM) to the integration framework server to improve performance.

Procedure

1. On your local drive `C:\Program Files\SAP\SAP Business One Integration\IntegrationServer\tomcat\bin\` double-click tomcat<version>.exe.

   If the system denies access, select tomcat<version>.exe, open the context menu and select the Run as Administrator option.

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2. In a 64-bit operating system, the default is 2048 MB for the maximum memory pool amount for Tomcat. Select the Java tab and increase the maximum memory pool amount.

7.8.6 Changing Integration Framework Server Ports

By default, the integration framework server uses port `8080` for http and `8443` for https. If another application is already using one of these ports, change the integration framework ports.

Procedure

1. If SAP Business One Event Sender Service is already running, stop the service.
2. In the …`\Program Files (x86)\SAP\ Integration Framework for SAP Business One\IntegrationServer\Tomcat\conf` folder, double-click the `server.xml` Tomcat file and in the `connector port` tag, change the settings as necessary. Do not change any other settings in the file.
3. Log on to the integration framework.
4. For framework version 1, choose Maintenance → Cfg Runtime and change the port or ports.

   For framework version 2, choose Maintenance → Configuration and change the port or ports.

   The integration framework also updates the setting in the SLSPP table in SAP Business One.
5. Restart the SAP Business One Integration Service.
6. Choose Start → All Programs → Integration Framework for SAP Business One → Integration Framework → Tools → Event Sender, click Setup Wizard, and follow the steps of the wizard.

   In the Configure Integration Framework Parameters section, change the Framework Server Port entry, and then test the connection.
7. Restart the SAP Business One Event Sender Service.
8. To change the properties for the menu entry of version 1, choose Start → All programs → Integration Framework for SAP Business One → Integration Framework. Be sure to use the correct port number.

7.8.7 Changing Event Sender Settings

SAP Business One writes events for new data, changes and deletions to the SEVT table. Based on filter settings, the event sender accesses the table, retrieves data and hands over the events to the integration framework for further processing.

The installation program installs and sets up the event sender on the SAP Business One server. The SAP Business One Event Sender setup is available as an external tool and as of SAP Business One 9.2 PL10, also in the integration framework. If you run the event sender on the same machine as the integration framework, we recommend using the setup that is part of the integration framework.

The following section describes event sender settings, although usually no further changes are required.

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NOTE

Only call the event sender setup in the following cases:

- You must change the password for database access.
- You have changed the B1iadmin password for the runtime user.
- You have moved to another SAP HANA server.
- To reduce the message load, you want to include or exclude some objects.
- You want to exclude users.

To check the settings for the event sender, use the integration framework troubleshooting function. In the integration framework version 1, choose Tools → Troubleshooting, and in the Functional Group field, choose Event Sender.

Procedure

1. To call the event sender setup, choose Start → All Programs → Integration Framework for SAP Business One → Integration Framework.

   The Logon user interface opens.
2. In the Username field, enter **`B1iadmin`** and in the Password field, enter the password that was provided during installation.
3. To open the event sender setup, choose Tools → Event Sender and click the Setup Wizard button.
4. In step 1, in the Choose a Database Type field, select the SAP Business One database type.
5. In the DB Connection Settings section, you can set the following:
   - In the DB Server Name field, enter the computer name or IP address of the machine, on which the database of the SAP Business One server is installed. Do not use **`localhost`**.

     ### Recommendation

     Use the hostname of the server. Only if you have problems specifying the hostname, use the IP address instead.

     ### Caution

     In the SAP Business One integration for SAP NetWeaver installation, this setting must be identical with the value in the b1Server field. If the values are not identical, they appear in the `Filtered` section.
   - In the Port field, enter the port number of the database server, on which the SAP Business One server is installed.
   - In the Setup DB Account and Password fields, the installation has set the database user name and password for database access during setup.

     This user must have access rights to create tables and store procedures.
   - In the Running DB Account and Password fields, the installation has set the database user name and password for database access at runtime.

     This user must have access rights to the event log and event lock tables.
   - Click Test Connection to test the connection to the SAP Business One database.
6. In step 2, the following settings are available in the Monitor Settings section.

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- In the Idle Time (millisecond) field, you can change the time period the event sender waits until it polls events from SAP Business One.

  The default is 3000 milliseconds.
- In the Batch Count field, you can set the number of events the event sender polls each time.

  The default is 10.

7. In step 3, you can change general settings for the integration framework.
8. By default, the installation program sets the Sending Method to **`Distributed`**.

   The event sender sends all events to the local server address and the event dispatcher takes over the task of distributing the events to other systems.

   For more information, see the Operations Guide Part 2, section Configuring the B1 Event Subscriber.
9. In the General Integration Framework Settings, you can configure the following:
   - In the Protocol Type field, select the protocol for the connection between the event sender and the integration framework. To enable https, make settings in the Tomcat administration.
   - In the Authentication field, always use the **`Basic`** option. This is the default.
   - If you selected the https protocol type, select Server Authentication to let the event sender verify the certificate. For the verification, do the following to make the `b1i.jks` file available in the …`\EventSender` folder:
     1. Copy the `\IntegrationServer\Tomcat\webapps\B1iXcellerator\.keystore` file.
     2. Rename the copied `.keystore` to `b1i.jks`.
     3. Copy `b1i.jks` to the …`\EventSender` folder.
   - In the Framework Server Host field, enter the name or IP address of your integration framework or the SAP Business One integration for SAP NetWeaver server.
   - In the Framework Server Port field, enter the port number of your integration framework or the SAP Business One integration for SAP NetWeaver server.
   - In the User Name field, enter the user name for accessing the integration framework or SAP Business One integration for SAP NetWeaver server. The default is **`B1iadmin`**.
   - In the Password field, enter the password for accessing the integration framework or SAP Business One integration for SAP NetWeaver server.
   - To test the connection, choose Test Connection.
10. In step 4, choose the company databases.

    The setup program displays the company databases in your SAP Business One system. For each company database, you can set up the following:

    1. Deselect the checkbox in front of the SAP Business One company database, if the company does not use the integration framework. If you deselect the checkbox, SAP Business One does not create events for the company database in the SEVT table.
    2. To define the Include List B1 Object(s) settings based on active scenario packages, click Generate.

       The SAP Business One event filter generator opens.
       - Determine the objects for the include list and click Apply. The wizard displays the list of company databases.
       - Select the databases for which you want to set the include filter. Note that for databases with defined exclude filter settings, the checkbox is disabled.
       - Click OK and the wizard writes the include filter settings to the selected databases.
       - Alternatively:

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In the Include List B1 Object(s) field, enter the object identifier of the SAP Business One object or objects. Separate entries by comma.

If you enter, for example, **22,17**, the event sender sends events for purchase orders and orders to the integration framework or the SAP Business One integration for SAP NetWeaver server.

If you leave the field empty, the event sender sends events for all SAP Business One objects to the integration framework or the SAP Business One integration for SAP NetWeaver server.

- In the Exclude List B1 Object(s) field, enter the object identifier of the SAP Business One object or objects. Separate entries by comma.

  If you enter **85**, for example, the event sender excludes events for special prices for groups.

  If you leave the field empty, the event sender sends events for all SAP Business One objects to the integration framework or the SAP Business One integration for SAP NetWeaver server.

> **Note**
>
> Use either the Include B1 Object(s) or the Exclude List B1 Object(s) function. Do not use the functions together.

- In the Exclude List B1 User field, enter SAP Business One users for which the event sender does not send events to the integration framework. Enter the SAP Business One user name, not the user code. Separate entries by comma.
- If you want the company database to create events based on indirect journal entries, select the Create Complete Journal Entry Events checkbox. Standard SAP Business One processing does not create events for indirect journal entries.

11. Step 5 gives you a summary of the event sender settings.
12. To save the settings, choose Deploy.
13. Restart the SAP Business One EventSender service and the SAP Business One client.

Result

The setup program stores the settings in the `datasource.properties` and `eventsenderconfig.properties` configuration files.

7.8.8 Changing SAP Business One DI Proxy Settings

SAP Business One DI Proxy is the SAP Business One-related component that enables data exchange with SAP Business One using the DI API. No additional steps are required to set up the SAP Business One DI Proxy service.

To influence the behavior of the SAP Business One DI Proxy service, parameters are available in the `diproxyserver.properties` file.

Procedure

1. To change parameters, access the `diproxyserver.properties` file in the …`SAP\SAP Business One Integration\ DIProxy` path.

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Property	Description
RMI_PORT	The parameter is obsolete.
HTTPS_PORT	DI Proxy TCP port for HTTPS.
MAXDIERRORS	If this property exists and has a value greater than 0, the value defines the number of DI errors that may occur before the DI Proxy restarts. The default is 50.
RESTARTPERIOD	If this property exists and has a value greater than 0, the value determines the time in minutes after which the DI Proxy restarts. The default is 60.
ORPHANED	This property defines the value in minutes after which the system defines a pending and not yet completed DI transaction as orphaned. The DI Proxy removes the transaction from the internal transaction list. If this property does not exist or does not have a positive value, the default is 10. If it exists, the default is 30.
JCOPATH	If this property exists and is not empty, it defines the path the DI Proxy uses to search for the Jco installation. In this case the system ignores any value coming from B1iP requested by an adapter. If the property does not exist, the system uses any value coming from B1iP requested by an adapter. In this case the setting is probably not definite. SAP recommends setting the Jco path in the `diproxyserver.properties` file. If you want to change a Jco path that someone has already maintained, and that the system has used for connection, you can apply this change only after you have restarted the SAP Business One DI Proxy Service. Use / or \\ instead of \ as a separator in the JCOPATH value. Use for example C:\\Program Files\\SAP\\SAP Business One DI API\\JCO\\LIB
JCOVERSION	If this property exists and is not empty, it defines the version the DI Proxy uses to search for the Jco installation.
restartAttemptDelay	As of DI Proxy version 30002211, you can overlay the default for a restart delay (500 milliseconds). Provide a value in milliseconds. The parameter is not part of the default `diproxyserver.properties` file. If you want to use it, add it manually.
restartAttemptCap	As of DI Proxy version 30002211, you can overlay the default number of restart attempts (10). The parameter is not part of the default `diproxyserver.properties` file. If you want to use it, add it manually.

2. If you change any settings, restart the SAP Business One DI Proxy Service.

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7.8.9 Using Proxy Groups

The DI adapter allows defining multiple proxy groups in the global adapter configuration properties. This allows load balancing by processing requests to multiple proxies. Requests can come from IPO steps that are independent of each other. If you process a step using a certain proxy, the step uses the proxy during the complete step processing.

You can find the following information in the proxy log file:

- The proxy logs the processing start and stop times and describes how the proxy was stopped.
- A usage statistics summary lets you decide whether the proxy suits the processing requirements or whether it should be enhanced to a proxy group to fulfill the overall requests.

7.8.9.1 Providing Further Proxies

To use proxy groups, provide several DI proxies.

Procedure

1. To enable a configuration set for a second DIProxy instance, copy the `DIProxy` folder and paste it.
   The system creates the `DIProxy - Copy` folder.
2. Rename the folder to `DIProxy2`.
3. In the `...\DIProxy2` folder, open the `service.ini` file and change the following entries:
   - **`ServiceName = SAPB1iDIProxy2`**
   - **`DisplayName = SAP Business One DI Proxy 2 Service`**
4. In the `...\DIProxy2` folder, open the `diproxyserver.properties` file.
5. Change the `HTTPS_PORT` parameter to **`2098`**, if port **`2098`** is available on your machine.
   `HTTPS_PORT=2098`
6. Choose Start, right-click Command Prompt and choose Run as administrator.
7. Run `service.exe` with the `-install` parameter in the `...\DIProxy2` folder.
8. Start the SAP Business One DI Proxy 2 Service Monitor service.
9. Repeat the steps above for the number of DIProxies you want to use.

7.8.9.2 Adding Proxy Groups to the DI Adapter Global Configuration

In the integration framework, you have the option of defining proxy groups with proxies. Define the proxy groups and proxies in the DI adapter global configuration.

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Procedure

1. In the integration framework, choose Tools → Control Center → Configuration → Global Adapter Config.
2. In the Global Adapter Configuration Properties user interface, for the B1DI adapter, click the Edit Global Configuration Properties link.
3. For the diProxyGroupList property, define the proxy groups in the following way:
   - `[<groupname1> <hostname1>:<port1>,<port2>][<groupname2> <hostname2>:<port1>,<port2>]`
     - `<groupname1,2>` are the proxy group names
     - `<hostname1,2>` are the host names or IP addresses of the proxies
     - `port1,2` are the port numbers

Example

You want to provide the following proxy groups:

- `alpha` and `beta`
- Each group has two proxies

```
[alpha abc:2099 def:3701][beta 1.2.3.4:2099,3000]
```

7.8.9.3 Using Proxy Groups in SLD

In SLD, enter the proxy group definition that you want to use for a certain company database in the diProxyhost field of the SAP Business One company database entry in the following way, for example: `[alpha]`

If you use a proxy group, leave the diProxyport field empty.

7.9 Validating the System

While validation is a natural part of the installation and upgrade process, you can always validate by yourself if the components are working properly after the installation or upgrade.

Procedure

The following procedure describes how to perform validation in GUI mode.

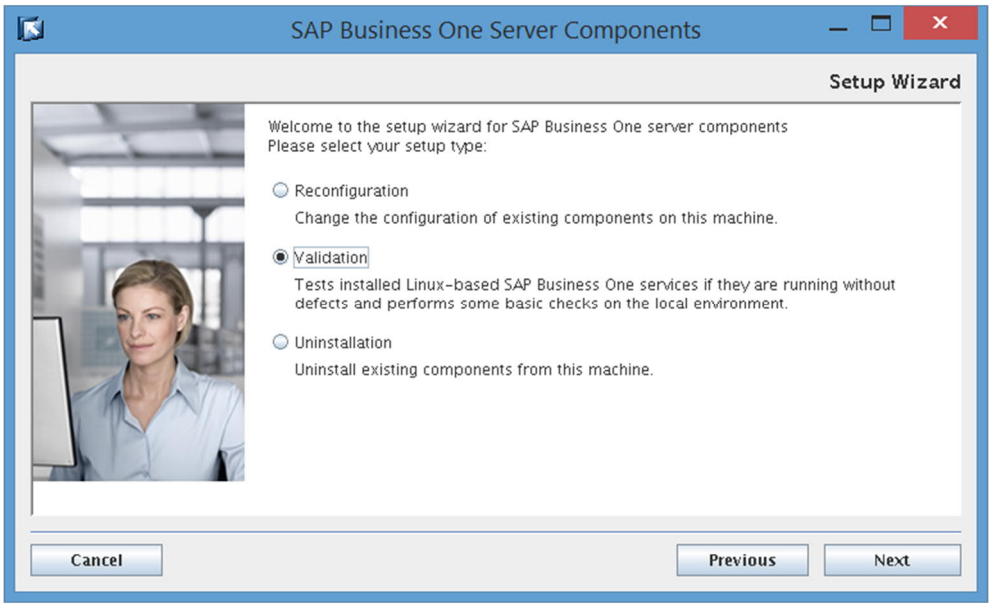
> **Note**
>
> You can also validate your system in silent mode. To do so, enter the following command line:
>
> ```
> ./setup -va silent
> ```
>
> For more information about supported arguments and parameters, see Silent Installation.

1. Log on to the Linux server as `root`.

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2. In a command line terminal, navigate to the installation folder of SAP Business One where the setup script is located. By default the installation folder is /usr/sap/SAPBusinessOne.
3. Enter the following command: `./setup`

   The server components setup wizard is launched.
4. In the welcome page, select Validation and choose Next.



5. The Select Features window lists all local SAP Business One components. Choose Next to continue.
6. The Review Settings window displays current settings. Choose Next to continue.
7. In the Validation Progress window, wait for the validation process to finish and then choose Next to continue.
8. In the Validation Completed window, review the validation results, take note of the components that did not pass the validation, and then choose Next to continue.
9. In the Validation Completed window, choose Finish to exit the wizard.

7.10 Reconfiguring the System

If you need to reconfigure the system, perform a reconfiguration using the server components setup wizard. For example, if the SAP HANA address or the database user password has changed, the SLD stops working and you must reconfigure the system.

The reconfiguration mode allows you to update some external information with SAP Business One and change some settings, as summarized in the table below:

Operation	Setting	Remarks
Update	Network address of the SAP Business One components	If you have assigned different IP addresses to components installed on the same machine, you can apply only one IP address.

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Operation	Setting	Remarks
	Network address of the SAP HANA server	If the IP address or hostname of the SAP HANA server has changed, you must "tell" SAP Business One about this change. For more information about changing the hostname of the SAP HANA server, see SAP Note 1780950.
	Database user password	If you want to keep using the original database user for life cycle management but the password for the database user has changed, you must "tell" SAP Business One about this change.
	SLD network address	Applicable for SAP Business One components installed separately from the SLD. If the network address of the remote SLD has changed, you must first reconfigure the SAP Business One system on the SLD server and then on all machines with other SAP Business One components.
Change	Database user	If you want to use a different database user for life cycle management, you must reconfigure the system. This database user must have the required database privileges. For more information, see Database Privileges for Installing, Upgrading, and Using SAP Business One. Note that changing the admin user for server connection in the SLD does not change the database user for life cycle management.
	Backup settings	Includes the backup folder, the backup folder size limit, and the schema compression setting. You can also register more SAP HANA servers with the backup service, or edit or delete existing SAP HANA servers.
	Service Layer settings	You can change the Service Layer settings, such as adding or removing load balancer members, changing the port number, or changing the maximum threads per load balancer member.
	Security Certificate	You can change the certificate used for authentication.
	Windows Domain User Authentication (Single Sign-On)	You can change the Windows Domain User Authentication settings, such as changing the fully-qualified domain name, domain controller, domain user name or password.

Procedure

The following procedure describes how to perform validation in GUI mode on the SLD server. The scenario where the SLD is installed remotely is omitted.

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Note

You can also reconfigure your system in silent mode. To do so, enter the following command line:

```
./setup -r silent -f <Property File Path>
```

For more information about supported arguments and parameters, see Silent Installation.

1. Log on to the Linux server as `root`.
2. In a command line terminal, navigate to the installation folder of SAP Business One where the setup script is located. By default the installation folder is /usr/sap/SAPBusinessOne.
3. Enter the following command: `./setup`

   The server components setup wizard is launched.
4. In the welcome page, select Reconfiguration and choose Next.



5. In the Network Address window, you can select a new IP address or enter the new hostname for SAP Business One components. Choose Next to continue.
6. In the Database Server Specification window, you can enter the new network address for the SAP HANA server, specify another database user, or enter the new password for the original database user. Choose Next to continue.

   Note that the database user must have appropriate database privileges. For more information, see Database Privileges for Installing, Upgrading, and Using SAP Business One.
7. The Installed Components for Reconfiguration window lists all local SAP Business One components. Choose Next to continue.
8. In the Service Port window, you can specify a new port for SAP Business One services. Choose Next to continue.
9. In the Site User Password window, enter the password for the site super user `B1SiteUser`, and choose Next to continue.

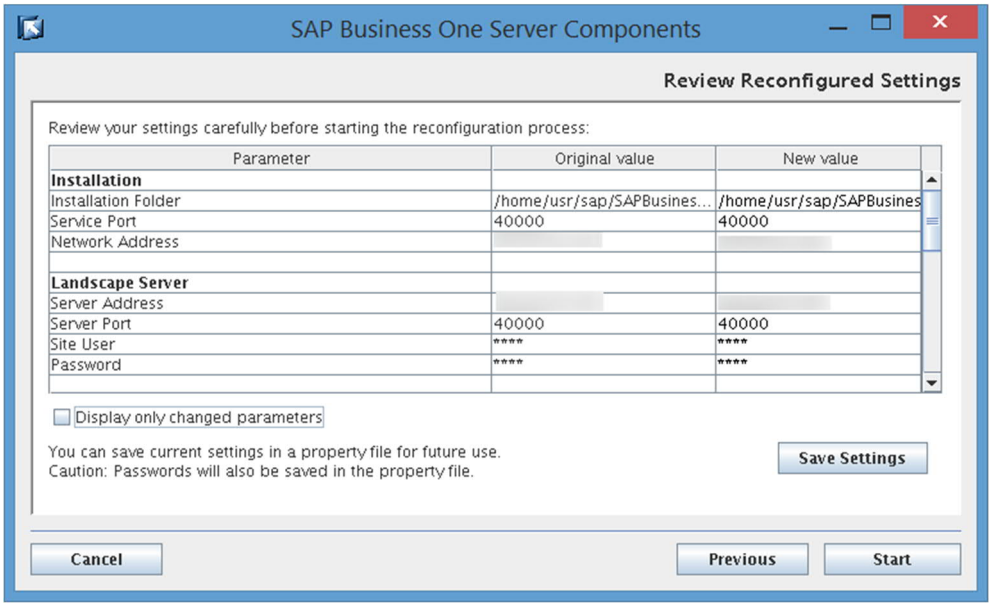
   Note that you can change the site user password only in the SLD. For more information, see Managing Site Users.
10. In the Specify Security Certificate window, you can change the certificate used for authentication.

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11. In the Landscape Server window, you can select a new network address and port number as the SLD address that will be used by all other components for component registration. If you do not intend to use High Availability mode or reverse proxy or virtual address for SLD, always keep the default values.
12. If the app framework is one of the local components, the Restart Database Server window appears. Choose whether to allow automatic restart or perform manual restart after the reconfiguration, and then choose Next to continue.
13. In the Backup Service Settings window, you can change the backup settings. Choose Next to continue.

    Note that you can change the backup folder directly in the SLD; for the other settings (for example, company schema compression), you must perform a reconfiguration.
14. In the SAP HANA Databases for Backup window, you can add, edit, or delete an SAP HANA server for backup.
15. In the Service Layer window, you can change the Service Layer settings. Choose Next to continue.
16. In the Windows Domain User Authentication (Single Sign-On) window, you can change Windows domain user authentication settings.

    > **Note**
    >
    > If you have not enabled single sign-on, you can choose whether to do so or not in the Windows Domain User Authentication (Single Sign-On) window. For detailed instructions, see Installing Linux-Based Server Components.
    >
    > However, if you have activated domain user authentication previously, you cannot disable single sign-on now.
17. In the Review Reconfigured Settings window, review the changed and unchanged settings and then choose Start to begin the reconfiguration process.



18. In the Reconfiguration Progress window, wait for the reconfiguration to finish and then choose Next to continue.
19. In the Reconfiguration Status window, review the reconfiguration results, take note of the components that have failed the reconfiguration, and then choose Next to continue.
20. In the Reconfiguration Completed window, choose Finish to exit the wizard.

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8 Performing Centralized Deployment

SAP Business One supports the central management of the SAP Business One landscape from the System Landscape Directory (SLD) control center. You can perform the following operations remotely through the SLD control center:

- Register logical machines
- Install the SAP Business One client components
- Register the database instances
- Deploy and upgrade the system database SBOCOMMON and demo databases
- Check the installed SAP Business One components across the whole SAP Business One landscape

To implement central management, you should access the SLD control center in a Web browser to follow the steps below:

1. Configuring global settings
2. Registering logical machines on the SLD control center
3. Registering database instances on the landscape server
4. Deploying or upgrading databases
5. Installing client components

Prerequisite

You have copied an SAP Business One product CD on some machine within the SAP Business One landscape.

8.1 Registering SAP Business One Installation CD

If you intend to perform remote administrative tasks from the SLD control center, you should have previously created the CD repository folder and the central log directory. The CD repository folder is the folder that contains SAP Business One product or upgrade CDs; the central log directory can be any folder within the landscape. These two folders are SLD related and you should share them previously. The shared folders can be defined during the SLD installation process. If you have not defined the shared folders during the installation, you can also define them or reconfigure them from the SLD control center.

> **Note**
>
> The CD repository folder and the central log directory are the prerequisites of all operations for landscape central management. You must create both shared folders before performing the other operations.

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Procedure

To define or reconfigure the shared folders of SAP Business One CD repository and the central log directory, perform the following steps:

1. Log on to the SLD control center.
2. On the Global Settings tab, in the Central Deployment area, click  (browse) next to CD Repository.
3. In the Share Settings window, enter the following information to define or reconfigure the CD repository shared folder and then choose Save.
   - Share Type: The default type is CD Repository.
   - Network Path: Enter the network path of the shared SAP Business One product CD repository. The product CD repository could be either the exact shared folder or a subfolder of a shared folder.

     Example

     If `B1_SHR` is a shared folder and `B1_DEFAULT_REPO` is a subfolder of the shared folder, you can specify either **`\\<IP address>\B1_SHR`** or **`\\<IP address>\B1_SHR\B1_DEFAULT_REPO`** as the CD repository shared folder.
   - Access User Name: Enter the name of a user who can access the product CD.
   - Access User Password
4. On the Global Settings tab, in the Central Deployment area, click  (browse) next to Central Log Directory.
5. In the Share Settings window, enter the following information to define or reconfigure the central log directory and then choose Save.
   - Share Type: The default type is Central Log Directory.
   - Network Path: Enter the network path of the shared central log directory. The shared central log directory could be either the exact shared folder or a subfolder of a shared folder.

     Example

     If `B1_CEN` is a shared folder and `B1_LOG_DIRO` is a subfolder of the shared folder, you can specify either **`\\<IP address>\B1_CEN`** or **`\\<IP address>\B1_CEN\B1_LOG_DIRO`** as the central log directory.
   - Access User Name: Enter the name of a user who can access the central log directory.
   - Access Password
6. In the Central Deployment area, define the SLD Agent timeouts.
   - SLD Agent Heartbeat Timeout: configure the time interval of the SLD Agent response to the SLD.

     Example

     When you define the SLD Agent heartbeat timeout to 3 minutes, the SLD Agent will report the hardware utilization of the logical machine to the SLD every 3 minutes; and will report the installed SAP Business One software components on the logical machine to the SLD every 30 minutes.
   - SLD Agent Operation Timeout: configure the maximum time period for a SLD operation task, such as logical machines registration, client components installation.

     Note

     The SLD Agent operation timeout does not apply to the database operation tasks, such as database updates.
7. In the Verbose Logging area, you can choose to enable verbose logging and download log files.

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8.2 Registering and Unregistering Logical Machines

SAP Business One supports the central management of the complete pool of machines in SAP Business One landscape from the System Landscape Directory (SLD) control center. To manage a machine remotely, you must register it into the SLD. A machine is registered to the System Landscape Directory (SLD) only when the SLD Agent is successfully installed on it and connected to the SLD.

> **Note**
>
> The SLD Agent is a key component of centralized deployment. The SLD Agent service executes tasks on behalf of the System Landscape Directory, such as performing database deployment and upgrades, remote installation and upgrades of SAP Business One client and DI API. The SLD Agent service is installed automatically during the logical machine registration in the System Landscape Directory control center. You can also manually install the SLD Agent service as follows:
>
> - On a Linux machine, you can choose to install the SLD Agent component during the SAP Business One installation process.
> - On a Windows machine, you can install the SLD Agent service separately by using the Components Setup Wizard provided by SAP. For more information, see Manually Installing SLD Agent Service.

If you intend to perform the central deployment for the system database `SBOCOMMON` and demo databases, you need to register the Linux machine; if you want to perform the SAP Business One client components deployment and database upgrades, you need to register the relevant Windows machines.

You can also cancel the registration of logical machines from the SLD control center. When you unregister machines, you uninstall the SLD Agent from the relevant logical machines.

8.2.1 Registering Logical Machines

Prerequisite

- You have defined SAP Business One CD repository folder and central log directory. If you have not defined the share folders, you can go to the Global Settings tab to configure them. For more information, see Registering SAP Business One Installation CD.
- If you intend to use any local account which is added into the local administration group to remotely register a logical machine from the SLD control center, you must set a registry key on the logical machine. The registry key is the `LocalAccountTokenFilterPolicy` file in the path `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System`. The value is `1`.

  > **Note**
  >
  > You do not need to set a registry key for remote registration of a local machine if you use any type of account as following,
  >
  > - A local administration account.
  > - A domain account which is added into the local administration group.

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8.2.1.1 Registering a Linux Machine

To register a Linux machine from the SLD control center, you should perform the following steps:

Procedure

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, choose Register.
3. In the Register Machine - Machine Name window, specify the following information:
   1. Hostname or IP address of the machine

      > **Note**
      >
      > Enter the full hostname or IP address. The value of the `localhost` (**`127.0.0.1`**) is not allowed.

   2. Machine description
4. In the Register Machine - Machine Fingerprint window, check the fingerprint of the machine.
5. In the Register Machine - User Credentials window, specify the following information and then choose Next:
   - User Name: Enter the domain and user name of a local administrator
   - Password: Enter the password of the local administrator.
6. In the Register Machine - Review window, review your settings carefully before starting the machine registration process. If you need to change your settings, choose Previous; otherwise, choose Start to start the registration process.
7. In the Register Machine - Status window, choose Close to close the window. The wizard continues running in the background until the registration completes.

8.2.1.2 Registering a Windows Machine

To register a Windows machine from the SLD control center, perform the following steps:

Procedure

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, choose Register.
3. In the Register Machine - Machine Name window, specify the following information:
   1. Hostname or IP address of the machine

      > **Note**
      >
      > Enter the full hostname or IP address. The `localhost` (**`127.0.0.1`**) is not allowed.

   2. Machine description
4. In the Register Machine - User Credentials window, specify the following information and then choose Next:

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- User name: Enter the domain and user name of a local administrator on the machine.
- Password: Enter the password of the local administrator.
- [Optional] Enable Secure Transfer: Select this checkbox to enable secure transfer and enter the following required information:
  - Certificate Common Name
  - The Absolute Path to CA File

  The certificate should be issued by a third-party certification authority (CA).

5. In the Register Machine - Review window, review your settings carefully before starting the machine registration process. If you need to change your settings, choose Previous; otherwise, choose Start to begin the registration process.
6. In the Register Machine - Status window, choose Close to close the window. The wizard continues running in the background until the registration completes.

Result

When a logical machine is successfully registered from the SLD control center, in the Logical Machines area, you can see the following information, which is not shown for machines on which the SLD Agent is installed by the separate wizard.

- Description: shows the description of the machine you defined during the registration process.

  There is no description for a machine on which the SLD Agent is installed by the Components Setup Wizard.
- Log: shows Successful, which links to a log folder. It records the whole operation log during the registration process.

  There is no log for a machine on which the SLD Agent is installed by the Components Setup Wizard.

8.2.1.2.1 Manually Installing SLD Agent Service

You can manually install the SLD Agent service on Windows machines by using the Components Setup Wizard or in silent mode.

Prerequisites

- You have installed the SLD.
- You have installed the SAP HANA database client for Windows on the Windows server on which you want to install the SLD Agent Service.
- You have installed Windows PowerShell 5 or the higher version on the machine on which you are performing the installation.
- You have administrator rights on the machine on which you are performing the installation.

  Note

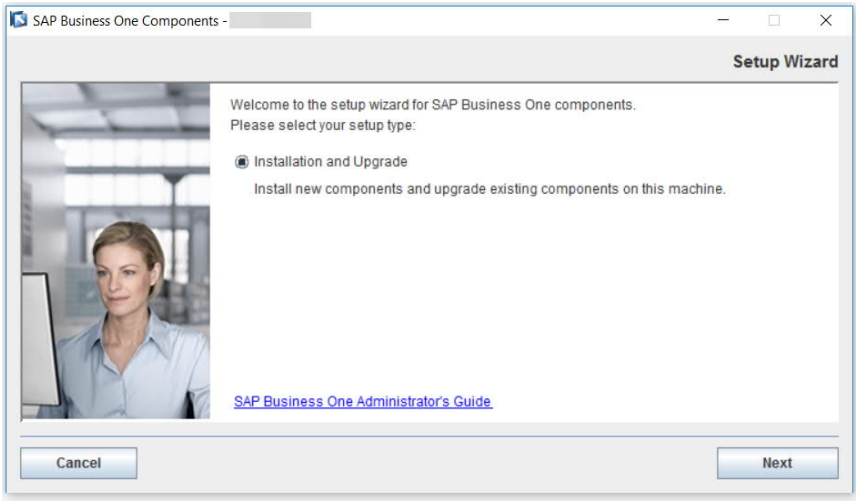
  For more information about possible installer issues related to the user account control (UAC) in Microsoft Windows operating systems, see SAP Note 1492196.

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Wizard Installation

The following procedure describes how to install the SLD Agent by using the Components Setup Wizard.

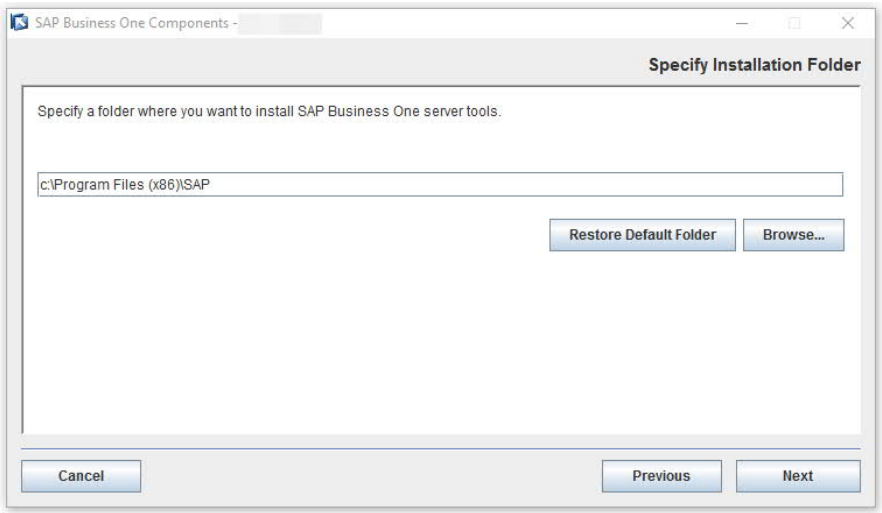
1. Navigate to the installation folder for the SLD Agent (default path: \Packages.x64\ComponentsWizard).
2. Select one of the executable files to run:
   - Install.exe: enables only GUI mode installation
   - Install-console.exe: enables both GUI mode and silent mode installation. When you start running this file, both a GUI screen and a separate console window are opened. The console output contains the full file path to the actual log file.
3. In the Setup Wizard window, select Installation and Upgrade and choose Next.



4. In the Specify Installation Folder window, specify the folder in which you want to install the SLD Agent and choose Next.

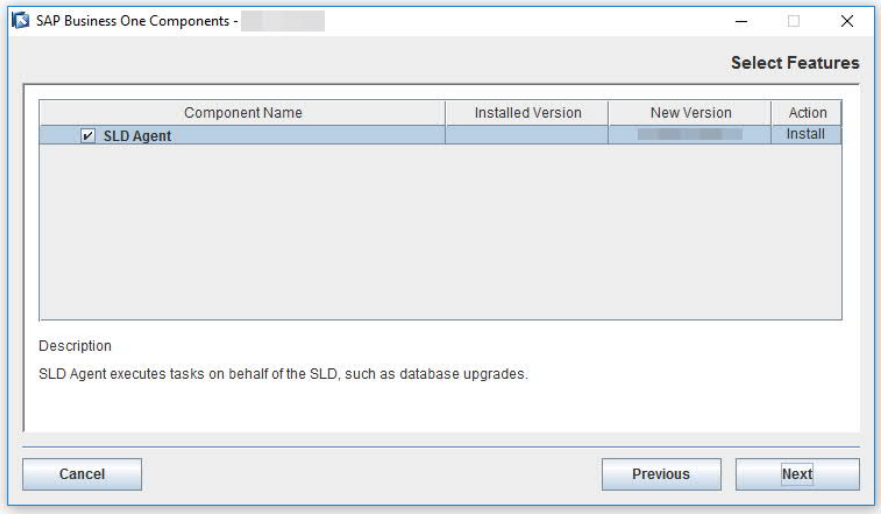
   Note

   The SLD Agent is a 32-bit application so it must be installed under the default path Program Files (x86).

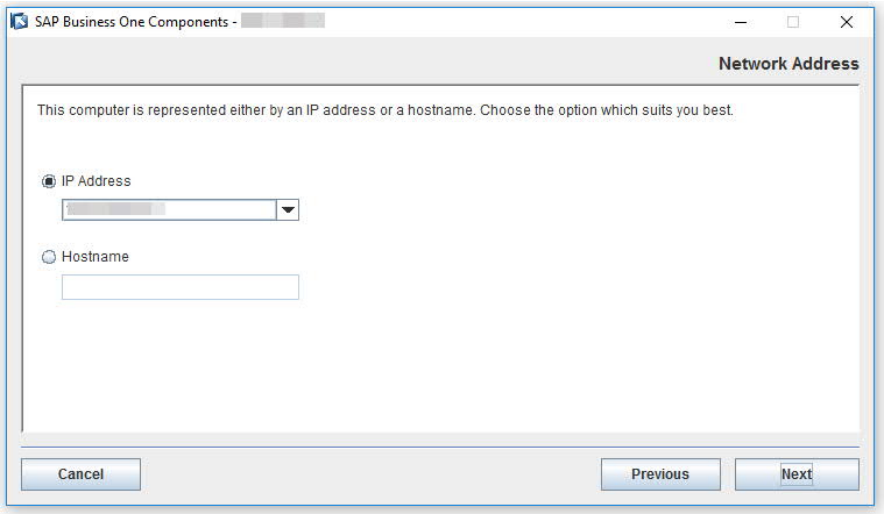


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5. In the Select Features window, select SLD Agent and choose Next.

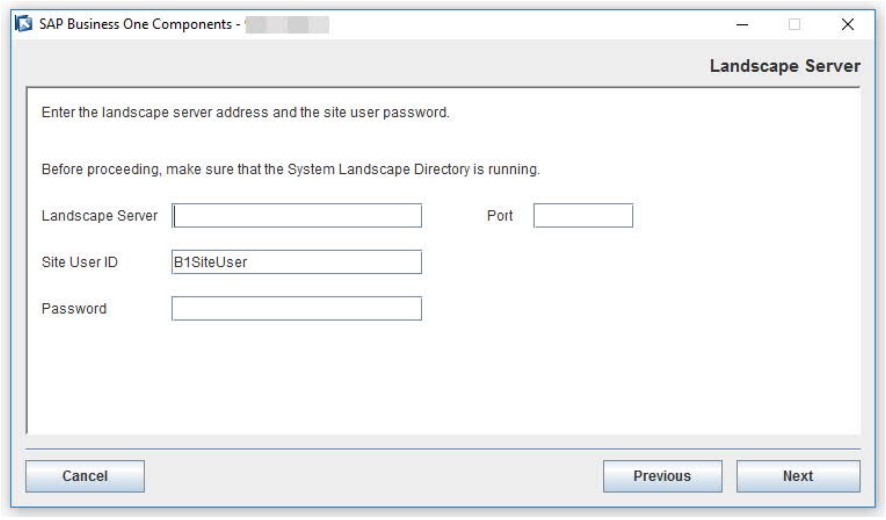


6. In the Network Address window, select an IP address or use the hostname as the network address for the selected components and choose Next.

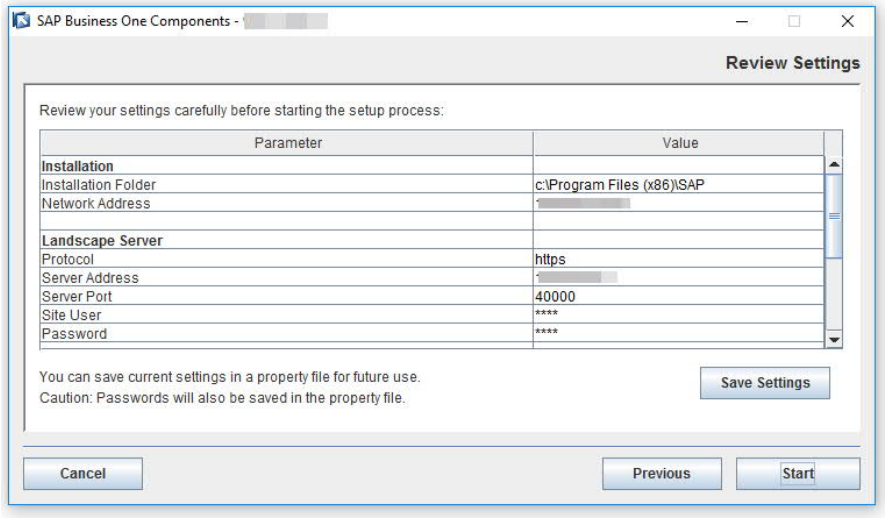


7. In the Landscape Server window, enter the landscape server address and the site user password and choose Next.

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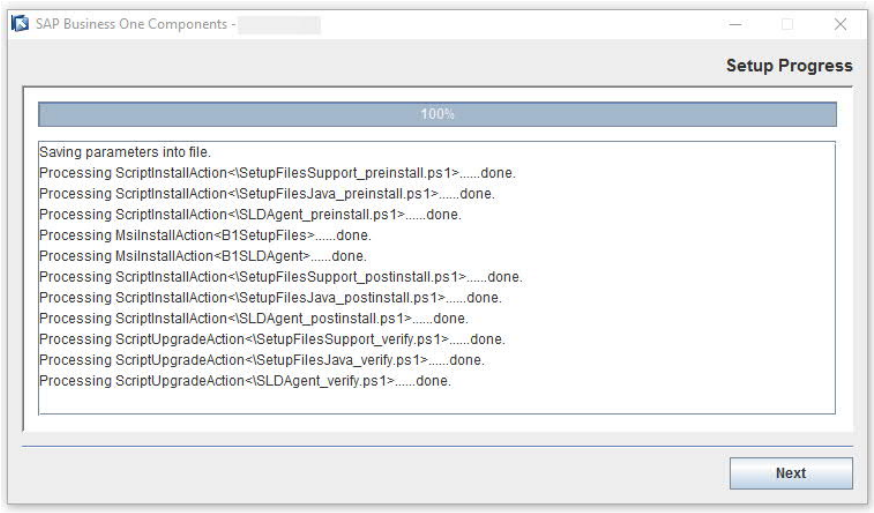


8. In the Review Settings window, review your settings carefully before proceeding to execute the installation. If you need to change your settings, choose Previous to return to the relevant windows; otherwise, choose Start to begin the installation.

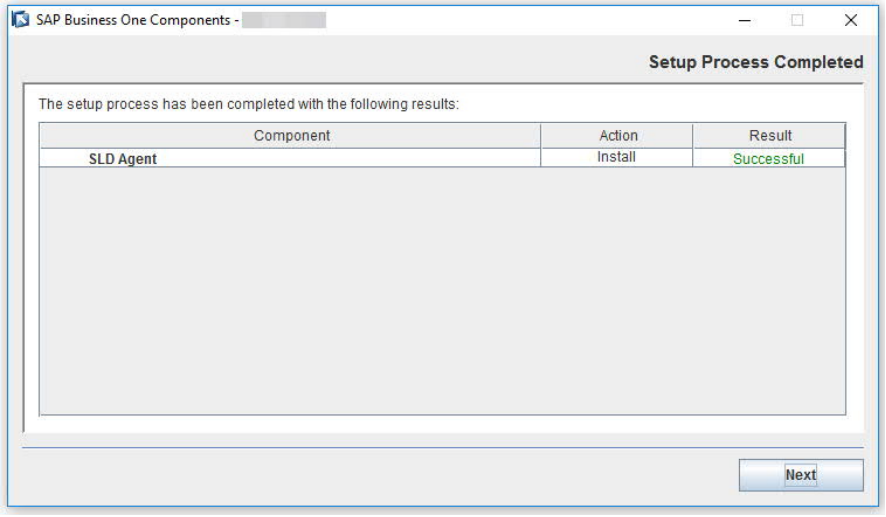


9. In the Setup Process window, when the progress bar displays 100%, choose Next to finish the installation.

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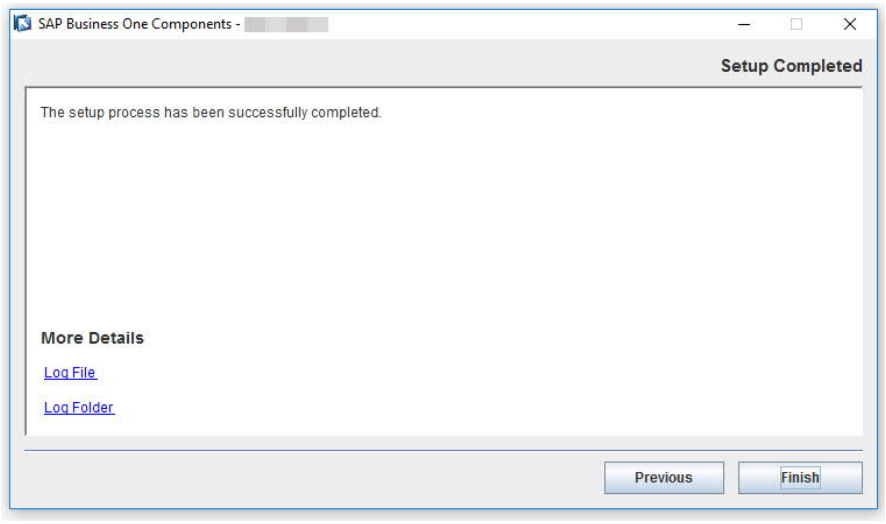


10. In the Setup Process Completed window, review the installation results showing that SLD Agent has been successfully installed.



11. To exit the wizard, choose Finish.

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Silent Installation

You can install (or upgrade) the SLD Agent in silent mode using command-line arguments and passing parameters from a pre-filled property file. To do so, enter the following command line:

```
install-console.exe -i silent -f <property file path> [--debug]
```

Property File Format

The property file is a text file with a simple structure `[Parameter]=[Value].` Each parameter is in a separate line.

For multiple values, you need separate parameter values separated by a comma. The format is as below:

- `Single value: Parameter=Value`
- `Multiple values: Parameter=Value1, Value2`

Example

```
SELECTED_FEATURES=B1SLDAgent
```

Parameters

The table below lists all parameters that are required for the SLD Agent installation.

Parameter	Description
INSTALLATION_FOLDER	Installation path for SLD Agent installation (The default path: `C:\Program Files (x86)\SAP\SAP Business One ServerTools\`)
LOCAL_ADDRESS	The network address of the current machine. This address will be used for registration and identification of the logical machine in SLD.
SELECTED_FEATURES	The only supported value is `B1SLDAgent`
SLD_SERVER_ADDR	Landscape server address.

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Parameter	Description
SLD_SERVER_PORT	Landscape server port number.
SITE_USER_ID	Site user name that will be used to access the System Landscape Directory (e.g. `B1SiteUser`).
SITE_USER_PASSWORD	Password for the specified site user.

8.2.2 Unregistering Logical Machines

You can cancel the registration of logical machines from the SLD control center. When you unregister a logical machine, you uninstall the SLD Agent from the machine.

Prerequisites

You have activated the SLD Agent on the logical machine which you intend to uninstall from the SLD control center.

Procedure

To unregister a logical machine, perform the following steps.

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, select the logical machine for which you want to cancel the registration, and choose Unregister.

   Note

   You can select one or multiple logical machines to unregister.
3. In the Machine Availability- Unregister Logical Machine window,
   - If SLD Agent is active on a selected logical machine, the status is Ready.
   - If SLD Agent is not active or is unable to provide access to a selected logical machine, the status is User Credentials Required. You are required to enter the user name and password.

   After entering the user credentials for all required machines, choose Start.

   Note

   Logical machines cannot be unregistered in the following status:
   - You have selected a local machine on which the SLD is installed.
4. In the Status window, choose Close to close the window. The operation continues running in the background until it completes.

The logical machine is removed from the logical machine list and the SLD Agent on the machine is uninstalled simultaneously.

Alternatively, you can log on to the selected logical machine and manually uninstall the SLD Agent.

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8.2.2.1 Manually uninstalling SLD Agent Service

You can log on to logical machines to manually uninstall the SLD Agent.

- On your Windows machine, in the Programs and Features window (Control Panel →Programs → Programs and Features), select SAP Business One SLD Agent and choose Uninstall. Alternatively, you can uninstall the SLD Agent by running the `setup.exe` file in the path `C:\Program Files (x86)\SAP\SAP Business One SetupFiles\setup.exe`.
- On your Linux machine, uninstall the SLD Agent as follows:
  1. Navigate to the installation folder for the SAP Business One server components (default path: `/usr/sap/SAPBusinessOne`).
  2. Start the uninstaller from the command line by entering one of the following commands, depending on the uninstallation mode:
     - Wizard uninstallation: Enter **`./setup`**, select Uninstallation, and then follow the steps in the wizard to uninstall the SLD Agent.
     - Silent uninstallation: Enter **`./setup -u silent -f <Property File Path>`**. For more information about supported arguments and parameters, see Silent Installation.

8.2.3 Upgrading SLD Agent Service

You can upgrade SLD Agent Service from the SLD control center. The operation of upgrading SLD Agent requires access to the relevant logical machines. Therefore, you must make sure logical machines are accessible for the upgrades.

To upgrade SLD Agent, perform the following steps:

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, select the logical machine for which you want to cancel the registration, and choose Upgrade SLD Agent.

   Note

   Upgrading SLD Agent requires access to the logical machine with the online SLD Agent. If SLD Agent is offline, you should first start it manually or from the SLD control center.

   You can select one or multiple logical machines to upgrade SLD Agent.
3. In the Machine Availability - Upgrade SLD Agent window,
   - If SLD Agent is active on a selected logical machine, the status is Ready.
   - If SLD is unable to provide access to a selected logical machine, the status is User Credentials Required. You are required to enter the user name and password.

   After entering the user credentials for all required machines, choose Start.

   Note

   SLD Agent cannot be upgraded in the following status:
   - The logical machine is unreachable.
   - SLD Agent is not running.
   - The installed SLD Agent is already in the latest version.

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- The installed SLD Agent is in an unknown version.
- You have selected a local machine on which the SLD is installed.

4. In the Status window, choose Close to close the window. The operation continues running in the background until it completes.

8.2.4 Starting SLD Agent Service

When SLD Agent is offline, you can invoke the SLD Agent service from the SLD control center.

Prerequisites

You have installed the SLD Agent service in the logical machine and the agent status is offline.

Procedure

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, select the logical machine for which you want to start the SLD Agent service, and choose Start SLD Agent.

   Note

   Starting SLD Agent is performed on the logical machine with the offline SLD Agent. You can select one or multiple logical machines to start the SLD Agent service.
3. In the Machine Availability - Start SLD Agent window, provide the user credentials and choose Start.

   Note

   SLD Agent cannot be started in the following status:
   - The logical machine is unreachable.
   - SLD Agent is not found on the logical machine.
   - SLD Agent is running.
   - You have selected a local machine on which the SLD is installed.
4. In the Status window, choose Close to close the window. The operation continues running in the background until it completes.

8.3 Installing and Uninstalling Client Components

After registering a logical machine to SAP Business One System Landscape Directory(SLD), you can centrally deploy SAP Business One Client and Data Interface API on the machine from the SLD control center.

You can also uninstall the client components from the SLD control center.

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8.3.1 Installing Client Components

Prerequisites

- You have defined SAP Business One CD repository folder and central log directory during the installation process. If you have not defined the share folders, you can go to the Global Settings tab to configure them. For more information, see Registering SAP Business One Installation CD.
- In the SLD control center, you have registered the logical machine on which you will deploy the client components. For more information, see Registering and Unregistering Logical Machines.

Procedure

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, select the machine on which you intend to deploy components.

   Note

   You can select multiple machines to install the client components on different machines simultaneously.
3. In the SAP Business One Components area, click Deploy.
4. In the Select Components window, choose the required client components.

   If you have selected multiple machines to deploy client components simultaneously, in this window you can see the component installation status for each selected machine.
   - If a machine has the component installed, you cannot install it again.
   - If a machine does not have the component installed, you can select the machine under the specific component and choose Next to continue the deployment.

     Note

     You should install the SAP Business One Client component together with the Data Interface API component.
5. In the Review window, review the settings you have made and choose Start.
6. In the next Review window, choose Close to close the window. The deployment operation will continue in the background until it is completed.
7. On the Logical Machines tab, in the SAP Business One Components area, you can see the Deployment Status of the components is either To be deployed or Deploying. Once the deployment process completes, the status changes to Deployed.

   Note

   If you installed components by running the setup wizard from logical machines, you can see the Deployment Status of the components is Deployed Externally.

If you want an overview of all installed components across the whole landscape, go to the Components tab.

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8.3.2 Uninstalling Client Components

You can uninstall SAP Business One Client and Data Interface API which have been installed from the SLD control center.

Procedure

1. Log on to the SLD control center.
2. On the Logical Machines tab, in the Logical Machines area, select the machine from which you intend to uninstall components.

   Note

   You can select multiple machines to uninstall the client components from different machines simultaneously.
3. In the SAP Business One Components area, choose Remove.
4. In the Remove and Uninstall Components window, you can choose if you will simultaneously uninstall the selected SAP Business One Client and DI API components from logical machines, and then choose Continue.

   Note

   If you do not enable the checkbox, the selected components will only be removed from the component list, but not uninstalled from the relevant logical machines.

After the uninstallation, you can reinstall SAP Business One Client and Data Interface API from the SLD control center.

8.4 Registering Database Instances on the Landscape Server

For companies to appear on the application´s logon screen, you must register the database instances on the landscape server using the System Landscape Directory.

Procedure

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the DB instances area, choose Add.
3. In the Add Server window, specify the following information and then choose OK:
   - Server Name: Specify your SAP HANA database server by entering the hostname or IP address.

     Caution

     Make sure that the server name does not contain any of the following special characters:
     - Ampersand (&)
     - Less than sign (<)

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- Greater than sign (>)
- Quotation mark (")
- Apostrophe (')

- Instance Number: Enter the instance number for your SAP HANA database.

  Caution

  The instance number must be a double-digit number within the **00-97** range. If you use a one-digit number, it is automatically converted to a double-digit number (for example, **0** is converted to **00**).

- Tenant Database Name: Enter the name of the tenant database which you intend to use.

  Caution

  Make sure the tenant database name starts with an uppercase letter and contains only the following characters:

  - Upper case
  - Alphanumeric
  - Underscore symbols (_)
  - If you use the lower case, each small letter is automatically converted to upper case.
  - Make sure the tenant database name is not SYSTEMDB.

- Database User Name: Enter the name of an admin database user. For information about the required database privileges, see Database Privileges for Installing, Upgrading, and Using SAP Business One.
- Database User Password
- [Optional] Backup Path: Specify the path to the backup folder for storing SAP HANA database instance backups and company schema exports.

  If you leave the field blank, the backup folder specified during the backup service installation is used.

  If you specify a folder other than the one specified during the installation, you must ensure the specified folder already exists on the SAP HANA server. Additionally, the SAP Business One service user for the current installation must be assigned as the owner of the folder. To assign the service user as the folder owner, do the following:

  1. Log on to the server as `root`.
  2. To identify the service user running the tomcat server for SAP Business One, run the following command:

     `ls -la <Installation Directory>`

     For example, **`ls -la /opt/sap/SAPBusinessOne`**
  3. To change the owner of the backup folder you want to use, run the following command:

     `chown <User Group>:<Service User> <Installation Directory>`

     For example, **`chown b1service0:b1service0 /home/BackupFolder`**

- Repository Access User Name
- Repository Access User Password
- [Optional] Connect Using SSL: Select this checkbox to enable secure communication between the SLD and SAP HANA database using the Secure Sockets Layer (SSL) protocol.

  1. Generate a SSL keystore file and ensure the file is correct. For more information about keystore, see SAP HANA Administration Guide at http://help.sap.com/hana_platform.
  2. Convert the format of the keystore file from binary data into base64 encoding.

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3. Open the keystore file and copy the string into the text field under the checkbox.
4. To change the current keystore file, click Change Key Store and replace the existing string with a new one.

> **Note**
>
> After enabling the connection using SSL, you can specify only the hostname or FQDN (fully qualified domain hostname) of the database server as the server address in Server Name rather than the IP address.

8.4.1 Backing Up Database Instances

You can manually back up database instances from the System Landscape Directory.

Procedure

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the DB instances area, select the DB instance on which you intend to perform the backup and click Back Up.
3. In the Back Up Instance window, choose OK to start the backup.

In the DB instances area, you can choose Show Backup Log to check the log of the backup operation.

You can also (recommended) set up a backup policy to regularly back up the entire SAP HANA instance and export each company schema. For more information, see Backup Policy.

8.4.1.1 Deleting Older Backups

You may want to delete older instance backups (older than the last successful backup) to save disk space. You can perform this operation via the System Landscape Directory.

Procedure

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the DB instances area, select the DB instance on which you intend to delete the older instance backups and click Delete Older Backups.
3. In the Delete Older Backups window, choose OK.

   The data backups and log backups which are older than the last successful backup are deleted. The backup files are physically removed from the backup location.

For any SAP HANA servers that are installed on a different machine from the backup service, you must perform some manual steps to be able to delete older SAP HANA server backups directly from the SLD control center. For more information, see SAP Note 2272350.

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8.5 Deploying and Upgrading Databases

After registering database instances on the landscape server, you can use the System Landscape Directory to remotely deploy the system database SBOCOMMON and demo databases, as well as remotely upgrade the SBOCOMMON schema and your company schemas.

8.5.1 Deploying Databases

Prerequisites

- You have defined SAP Business One CD repository folder and central log repository folder during the installation process. If you have not defined the share folders, you can go to the Global Settings tab to configure them. For more information, see Registering SAP Business One Installation CD.
- In the SLD control center, you have registered the Linux logical machines on which you will deploy databases. For more information, see Registering and Unregistering Logical Machines.

Procedure

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the DB instances area, select the DB instance on which you intend to deploy databases.
3. In the Companies area, click Deploy.
4. In the Select Databases window, select the system database SBOCOMMON or demo databases that you want to deploy.

   > **Note**
   >
   > In case of any connection error, the Site User and Database Server Connection windows may appear for SLD authentication and DB server connection.

5. In the Review window, review your settings carefully before starting the databases deployment process. If you need to change your settings, choose Previous; otherwise, choose Start to start the deployment.
6. In the Review window, choose Close to close the window. The wizard continues running in the background until the deployment completes.

8.5.2 Upgrading Databases

Prerequisites

- You have ensured that all SAP Business One, version for SAP HANA clients are closed.
- You have backed up the entire SAP HANA instance recently (at least within the last day).

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> **Note**
>
> If the upgrade fails, recover the entire instance.

- On your SAP HANA server, you have started the Samba component.
- For more information, see the section "Starting Samba to Access and Upgrade the Shared Folder" in Troubleshooting.
- The database user registered for server connection is an admin user. To confirm this, do the following:
  1. To find out which database user is registered, in the System Landscape Directory, on the DB Instances and Companies tab, in the DB Instances section, choose Edit.

     The Edit Server window displays the registered database user.
  2. In the SAP HANA studio, check if the registered database user is an admin user.
  3. If the registered database user is not an admin user, either change the database user to an admin user or assign the appropriate privileges to the currently registered user.
- If you have installed the integration framework of SAP Business One, version for SAP HANA, you have ensured that the following services have been stopped (in the order given below):
  1. SAP Business One Integration Event Sender
  2. SAP Business One integration DI Proxy Monitor
  3. SAP Business One integration DI Proxy
  4. Integration Server Service

  > **Note**
  >
  > After you have completed the upgrade process, you must restart the services in reverse order.

  > **Note**
  >
  > To only upgrade the integration framework, run the `setup.exe` file under `\Packages.x64\B1 Integration Component\Technology\` in the product package.
- You have defined SAP Business One CD repository folder and central log directory during the installation process. If you have not defined the share folders, you can go to the Global Settings tab to configure them. For more information, see Registering SAP Business One Installation CD.
- In the SLD control center, you have registered the Windows logical machines on which you will upgrade databases. For more information, see Registering and Unregistering Logical Machines.
- You have manually upgraded the System Landscape Directory (SLD) to the new version.
- You have updated the SAP Business One product CD that is used for the CD repository shared folder to the new version.

Procedure

1. Log on to the SLD control center.
2. On the DB Instances and Companies tab, in the DB instances area, select the DB instance where you intend to upgrade databases.
3. In the Companies area, select the database you intend to upgrade and choose Upgrade.

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Recommendation

You should lock the company whose database you will upgrade before starting upgrades. To do this, you can select the company and choose Lock. Then the company status is changed from Unlocked to Locked.

When the company is locked, no SAP Business One user can log on to the company from the SAP Business One application. Now you can continue the next steps to perform the upgrades from the SLD control center or start the setup wizard to upgrade the company schemas on the logical machine.

When the upgrades complete successfully, the company status is automatically changed to Unlocked and SAP Business One users can log on to the relevant company again.

Note

- SAP Business One database users do not have the authorization to lock companies. Only SAP Business One site users can lock companies from the SLD control center.
- You can revert the company status to Unlocked by clicking the same button.

4. In the Setup Type window, select Perform Setup and choose Next.
5. In the Select Databases window, select the system database `SBOCOMMON` or the company databases that you want to upgrade and choose Next.

   Note

   You can select only databases whose status is Ready for upgrades.
6. In the Backup Settings window, specify the folder in which you want to store the backup files.
7. In the Review window, review your settings carefully before starting the databases deployment process. If you need to change your settings, choose Previous; otherwise, choose Start to start the deployment.
8. Choose Close to close the window. The wizard continues running in the background until the upgrades complete.

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9 Migrating from Microsoft SQL Server to SAP HANA

The following SAP Business One releases are supported for migration to SAP Business One 10.0, version for SAP HANA:

- SAP Business One 9.2
- SAP Business One 9.3

For more information about migrating from specific patches of supported releases, see the Overview Note for the respective SAP Business One patch, version for SAP HANA.

9.1 Migration Process

To migrate SAP Business One hosted on the Microsoft SQL Server to SAP HANA and upgrade to SAP Business One 10.0, version for SAP HANA, do the following:

1. To determine the migration path, read the Overview Note for the required version for SAP HANA.

   For example, check which versions for Microsoft SQL Server are supported for migration to the required version for SAP HANA. If direct migration is not supported, you first need to upgrade your system to a supported version for Microsoft SQL Server and then perform the migration operation.
2. [If required] If your SAP Business One version is lower than 9.2 PL00, upgrade your company databases to a version that can be migrated to SAP Business One 10.0, version for SAP HANA. For more information, see SAP Note 2842029 .
3. On your Linux server, do the following:
   1. Install SAP Business One server components, version for SAP HANA. For more information, see Installing SAP Business One, Version for SAP HANA.
   2. If required, upgrade the server components to the required version. For more information, see Upgrading Server Components.
4. On a Windows machine, run the migration wizard to migrate your company schemas from the Microsoft SQL Server to the SAP HANA database. For more information, see Running the Migration Wizard

   A single migration wizard handles the entire company schema migration process. The migration process includes both company database migration to SAP HANA and company schema upgrade on SAP HANA. If you do not upgrade the company schemas immediately after migrating from the Microsoft SQL Server, the migration process is considered incomplete; you can then use the SAP HANA version of setup wizard to upgrade the migrated company schemas and complete the migration process.
5. Uninstall all old server and client components from the Windows control panel.

   Recommendation

   After the uninstallation, delete all `SAP Business One` folders and files within the folders. By default, you can find the folders under `C:\Program Files (x86)\SAP\.`
6. Convert and migrate your customized contents.

7. Install the Windows-based server components and SAP Business client using the product package, and then if required, upgrade the components to the preferred version using the upgrade package.

9.2 Running the Migration Wizard

The migration wizard helps you to migrate your company databases from Microsoft SQL Server to SAP HANA. The process of migrating company databases consists of the following steps:

1. Perform pre-migration tests.
2. Migrate selected company databases to SAP HANA.
3. Perform post-migration tests.

   If the migrated databases fail the tests, you cannot proceed with step 4. While the original company databases on Microsoft SQL Server remain intact, the schemas on SAP HANA cannot be used.
4. Upgrade the successfully migrated company databases (schemas on SAP HANA).

   You can upgrade the schemas separately using the SAP HANA version of `setup wizard`. However, note that the migration would be considered incomplete without the upgrade and you will not be able to use the migrated schemas until you have upgraded them to the required version.

   If upgrade fails on the `SBOCOMMON` schema, the upgrade is rolled back for all schemas; if upgrade fails on a company schema, the upgrade is rolled back for that company schema.

Prerequisites

- You have downloaded the upgrade package of the required version of SAP Business One, version for SAP HANA.
- You have installed the SAP Business One server components, version for SAP HANA and upgraded the server components to the required patch level. For more information, see Installing SAP Business One, Version for SAP HANA and Upgrading Server Components.
- The version of your company databases is not lower than 9.2 `PL00`. Otherwise, you must first upgrade the databases to a patch level (SQL version) that can be migrated to the required version for SAP HANA.
- You have ensured that all SAP Business One clients are closed.
- You have removed all add-ons (system and third-party). This prevents future problems when using add-ons. You can register the add-ons after you complete the migration. For more information about removing and registering add-ons, see the SAP Business One online help.
- On the Windows machine on which you want to run the migration wizard, you have done the following:
  - Installed the 64-bit Java 8 and appended the directory `$JAVA_HOME/bin` to the system variable `PATH`.
  - Installed the 64-bit SAP HANA database client for Windows.
  - Installed the Microsoft SQL Server native client with the same version as your Microsoft SQL Server.
  - Added the System Landscape Directory server to the list of proxy exceptions.
  - Downloaded the upgrade package for the required patch level of SAP Business One 10.0, version for SAP HANA. For the download instructions, refer to the corresponding SAP Overview Note.
- The memory of the machine on which you want to run the migration tool is no less than 4 GB.
- For the prerequisites specific to the upgrade stage, see Upgrading SAP Business One Schemas and Other Components.

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Procedure

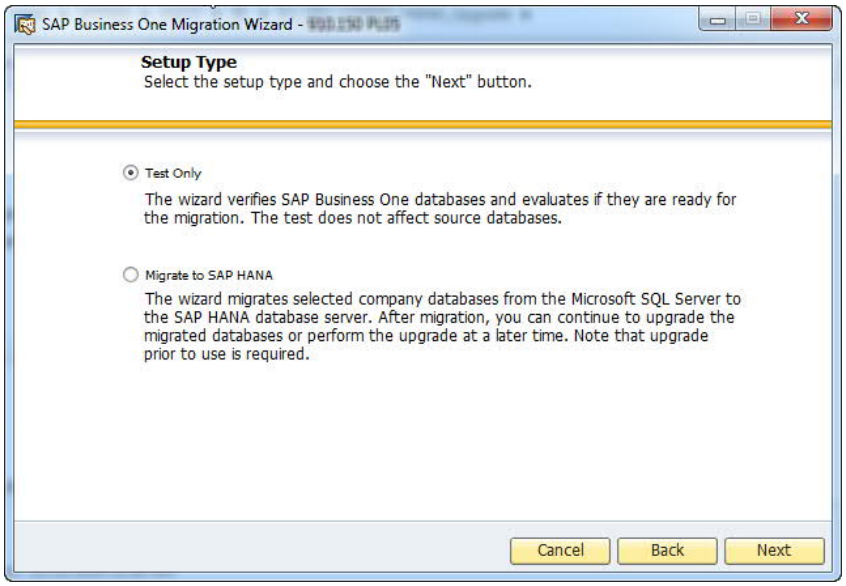
1. In the upgrade package root folder, right-click the Migrate.exe file and choose Run as administrator.
   The migration wizard is launched.
2. In the welcome window of the wizard, select a language and choose Next.



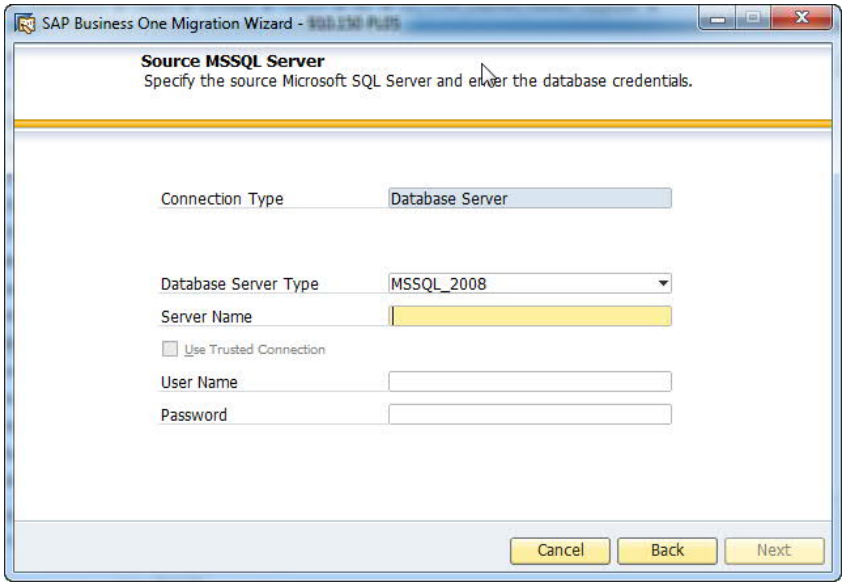
3. In the Setup Type window, the following options are available:
   - Test Only: Checks whether the databases are ready for migration. For each company database that passes the test, you can generate a passcode which you can later use to bypass all or part of the pre-migration tests when migrating the database. The passcode is in the form of an XML file that contains details on the tested company database. It is valid for three days; any changes to the company configuration render the passcode invalid.
   - Migrate to SAP HANA: Performs pre-migration tests, migrates the selected databases to SAP HANA, and upgrades the successfully migrated schemas on SAP HANA. If you performed a pre-migration test for a company database earlier, you can bypass the pre-migration test for this company database by entering the passcode.

   Select Migrate to SAP HANA and choose Next.

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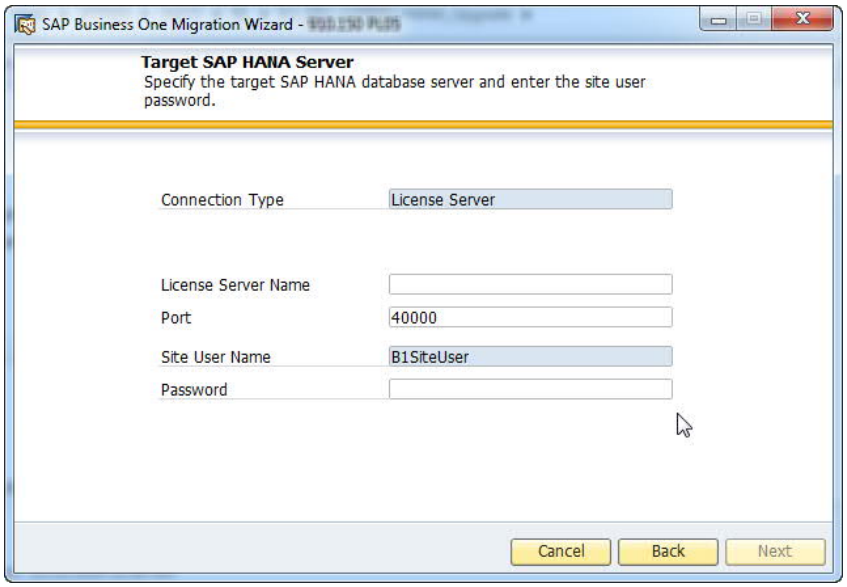
4. In the Source MSSQL Server window, specify the following information and choose Next:
   - Database Server Type: Select the database server type and version.
   - Server Name: For a default instance, enter the hostname or IP address of the server; for a named instance, specify <**Hostname>\<Instance Name>**.
   - User Name: Enter the name of a database user.
   - Password: Enter the password for the database user.



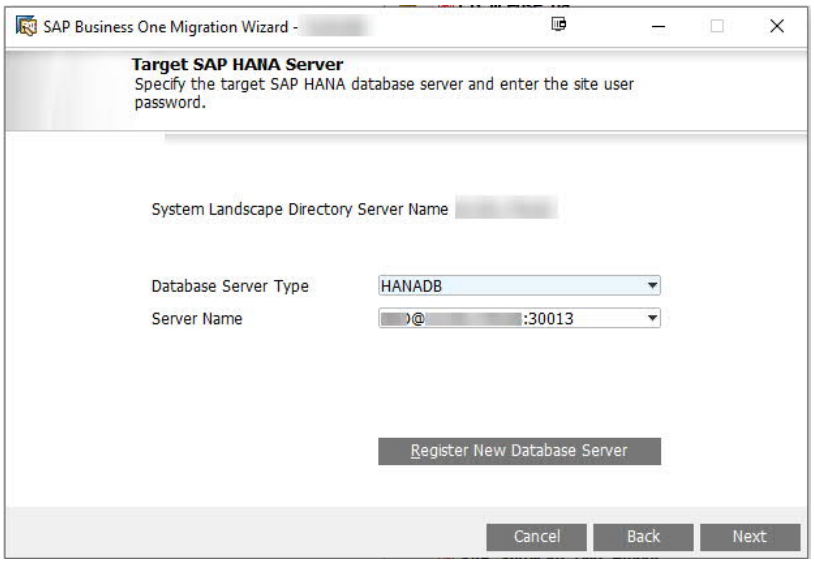
5. In the Target SAP HANA Server window, specify the following information and choose Next:
   - License Server Name: Enter the hostname or IP address of your System Landscape Directory server (SAP HANA version).
   - Port: Enter the port for the System Landscape Directory service.
   - Password: Enter the password for the site user `B1SiteUser`.

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Note that if you chose to perform only the pre-migration test, this window is skipped and you are directly asked to select databases for migration.



6. In the next Target SAP HANA Server window, select the SAP HANA server to which you want to migrate your company databases and choose Next.



If you do not find the required database server in the server list, you can register it in the System Landscape Directory (SAP HANA version). To do so, choose Register New Database Server, specify the relevant information, and then choose Back to continue with the migration.

7. In the Migration Performance Settings window, to prevent the migration operation from taking up too many system resources, you can change the following settings:
   - JAVA VM Memory Allocation (MB): Set an upper limit on the memory to be used by the JAVA virtual machine. The value is evaluated dynamically according to the system.

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- Read/Write Batch Size (No. of Records): Define the number of records to be included in a single read/write batch operation. The default value is 10000.
- Max. blob size (MB): Set an upper limit on the size of BLOBs (binary large objects). BLOBs that are larger than the defined value will not be migrated to SAP HANA.

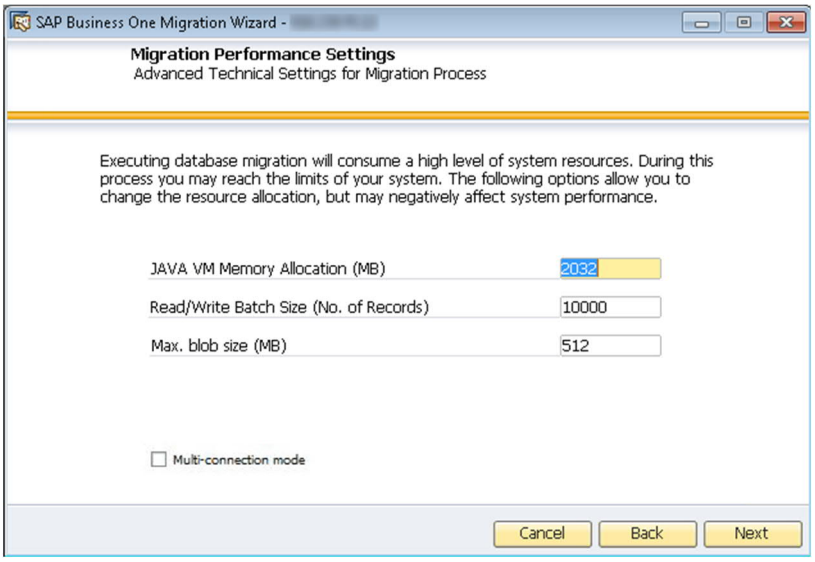
  The default value is 512 MB.
- Multi-connection mode: Select this option to execute the migration process in multiple threads. The migrated databases are then set to multi-user mode rather than single-user mode.

  Note that the multi-user mode cannot prevent data changes made by other user sessions during the migration process. Therefore, while selecting this option will speed up the migration process, you must take extra caution and warn other users against making any data changes during the process.

  Caution

  Do not change the default values for the read/write batch size and the maximum BLOB size unless you encounter problems with migration. Otherwise, the migration performance may be negatively impacted.

  If a database contains some very large BLOBs, you are advised to increase the Max. blob size value and decrease the Read/Write Batch Size value.



8. In the Database Selection window, do the following:
   1. If any of the databases you want to migrate are not ready for migration, do the following:
      - If the checkbox is disabled for selection, a serious error is detected (for example, the database version is not supported for migration) and you must resolve the issue before you migrate the database. To view details of the issue, choose the `Not Ready` link.
      - If the checkbox is enabled for selection but the database status is `Not Ready`, an easy-to-fix error is detected (for example, there are other applications connecting to the database). To set the database status to `Ready`, choose the `Not Ready` link to see the cause of the error, resolve the issue, and then choose Refresh.

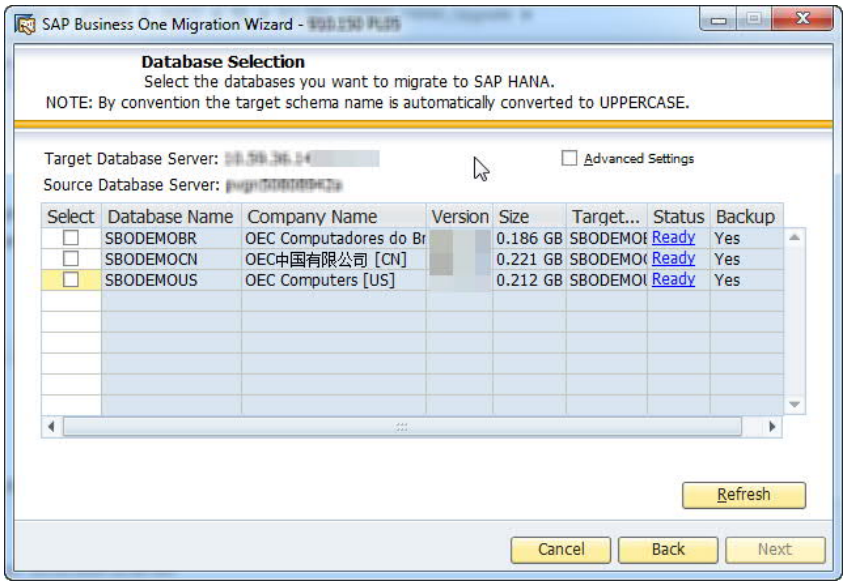
      The Next button is enabled only if at least one database is selected and all selected databases are ready for migration.
   2. Select the databases that are ready for migration.

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If you want to make advanced settings for a database, select the checkbox for the relevant database and then select the Advanced Settings checkbox. Additional information (for example, database size) is displayed along with the advanced settings.

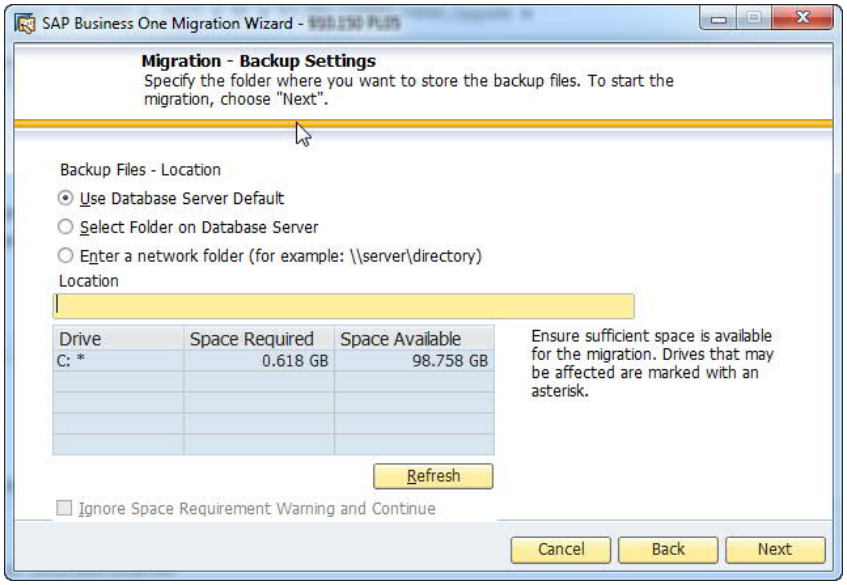
> **Note**
>
> For each database to be migrated, a schema is created in the SAP HANA database. The schema is named after the database but always in upper case. If you rename the schema in the advanced settings, each small letter is automatically converted to upper case.

3. Choose Next.



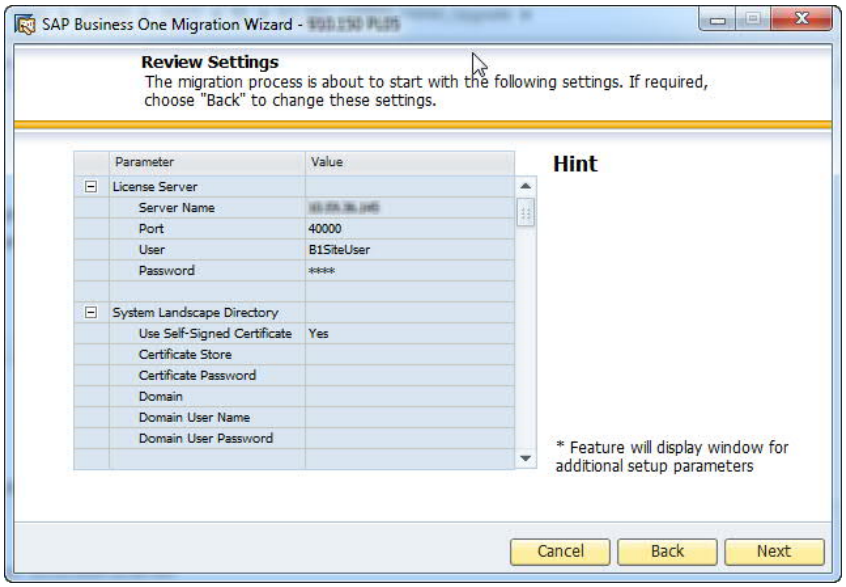
9. In the Migration - Backup Settings window, specify a backup location and choose Next.

All selected databases will be backed up before being checked for migration. If the selected location does not have sufficient space, you must free some space in the location and then choose Refresh.



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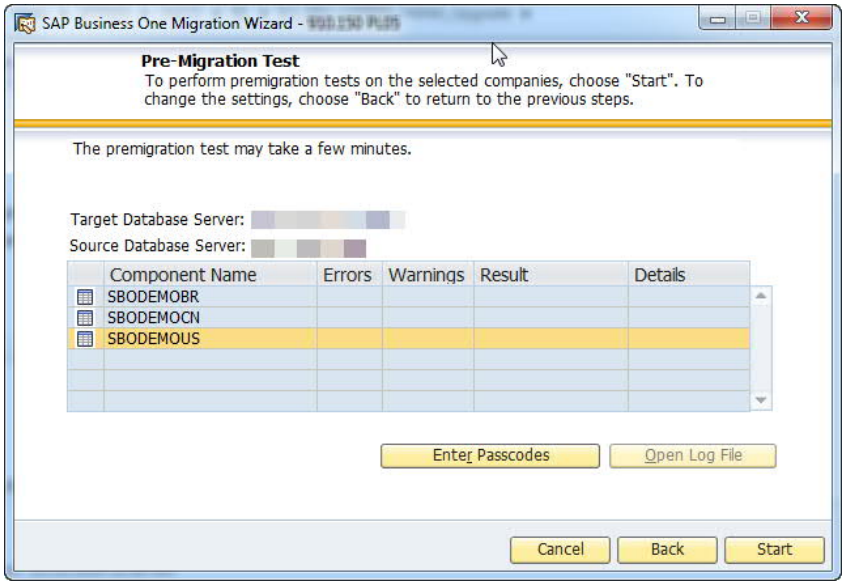
10. In the Review Settings window, review the settings. If you want to change the settings, choose Back to return to the relevant window; otherwise, choose Next to start the pre-migration test.



11. In the Pre-Migration Test window, do the following:
    - To bypass the tests for certain company databases, choose Enter Passcodes and upload one or several passcode files that you saved earlier. After uploading the files, choose Next.

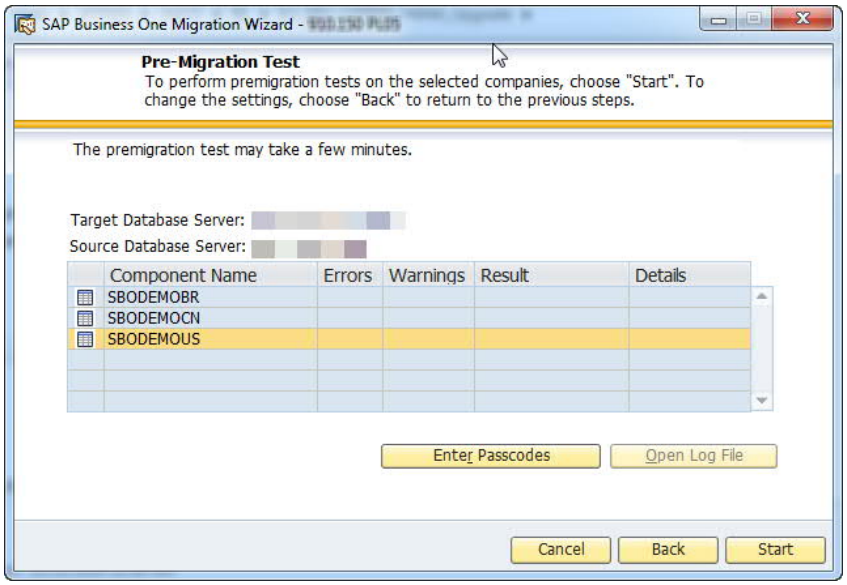
      > **Note**
      >
      > A passcode file is only valid for three days. Any changes to the company configuration render the passcode file invalid.

    - To start the pre-migration test for the company databases, choose Start.

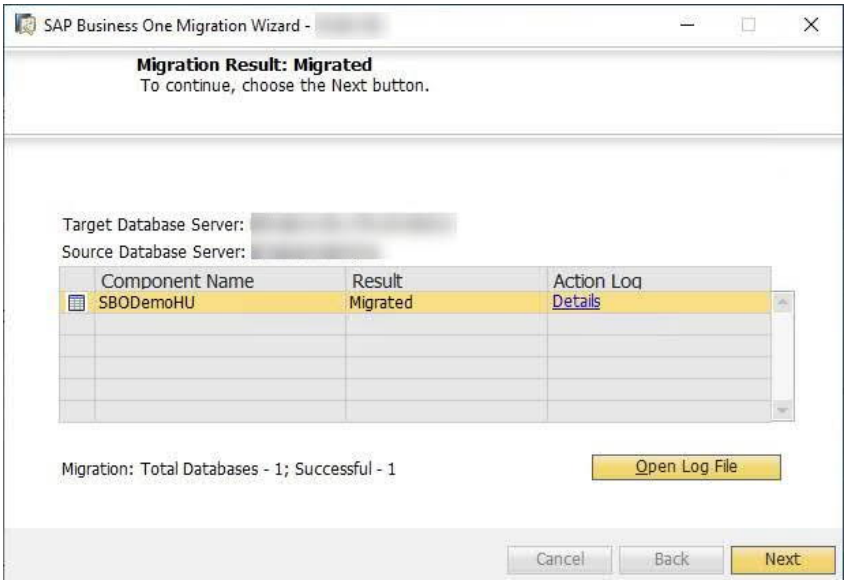


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12. If the wizard identified any errors or warnings on a database, the Pre-Migration Test: Errors Detected or Pre-Migration Test: Warnings Detected window is displayed. Do either of the following:
    - If only warnings were detected, do the following:
        1. Review all the warnings and instructions in the relevant SAP Notes.
        2. After carefully reading the instructions, you can decide to confirm the warnings, if appropriate.
        3. Choose Back to return to the pre-migration test results screen.
        4. With all warnings confirmed and no errors detected, choose Migrate to start migrating databases that have passed the pre-migration test.
    - If some errors were detected in a database, you must fix the errors before being able to migrate the relevant database. If you want to continue to migrate the other databases, go back to the Database Selection window and deselect the databases that failed the pre-migration test.



13. In the migration result window, review the migration details of each database and choose Next.



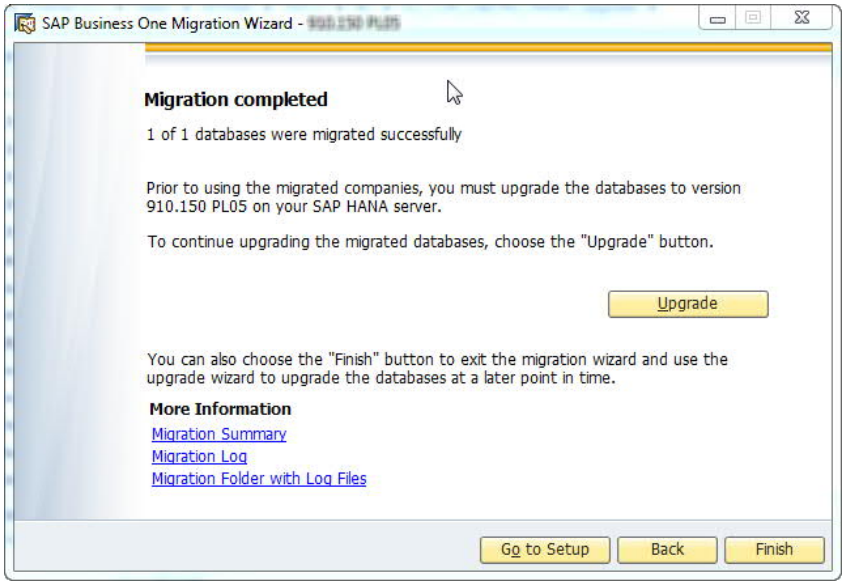
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14. In the finish window, do either of the following:
    - To upgrade the successfully migrated databases later and exit the wizard, choose Finish.

      Caution

      Without an upgrade, the migration is considered incomplete. You must run the SAP HANA version of setup wizard to upgrade the databases (schemas on SAP HANA) later. For more information, see Upgrading SAP Business One Schemas and Other Components.
    - To upgrade the successfully migrated databases (schemas on SAP HANA) immediately, choose Upgrade. For detailed instructions on the upgrade stage, see Upgrading SAP Business One Schemas and Other Components, starting from step 9.

      For databases which failed the migration or the post-migration checks, review the log information and resolve the errors in the databases before attempting migration again.



Results

- Despite the migration result, a corresponding schema is created in the SAP HANA database for each database selected for migration. We recommend that you drop (delete) the schemas of the databases which failed the migration so as to prevent potential confusion.
- All database tables are migrated, including user-defined tables (UDTs) and user-defined fields (UDFs).
- You can find the log files and summary reports in the following folders:
    - Migration stage: `%ProgramData%\SAP\SAP Business One\Log\SAP Business One\%UserProfile%\MigrationWizard\...`

      Note

      You can find the log for the most recent migration operations in the folder `%ProgramData%\SAP\SAP Business One\Log\SAP Business One\%UserProfile%\MigrationWizard\Current Logs\.`
    - Upgrade stage: `%ProgramData%\SAP\SAP Business One\Log\SAP Business One\%UserProfile%\SetupWizard\...`

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- You can now proceed to convert and migrate customized contents (reports, dashboards, stored procedures, add-ons, user-defined queries, and so on), excluding UDTs and UDFs.

  Due to the different SQL syntaxes in the Microsoft SQL Server and in the SAP HANA database, we provide a half-automated converter tool to help you with the conversion. To download the tool along with the how-to guide, search for How to Convert SQL from the Microsoft SQL Server Database to the SAP HANA Database on SAP Help Portal.

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10 Managing Security in SAP Business One, version for SAP HANA

Your security requirements are not limited to SAP Business One, version for SAP HANA, but apply to your entire system landscape. Therefore, we recommend establishing a security policy that addresses the security issues of the entire company. This section offers several recommendations to help you meet the security demands of SAP Business One, version for SAP HANA.

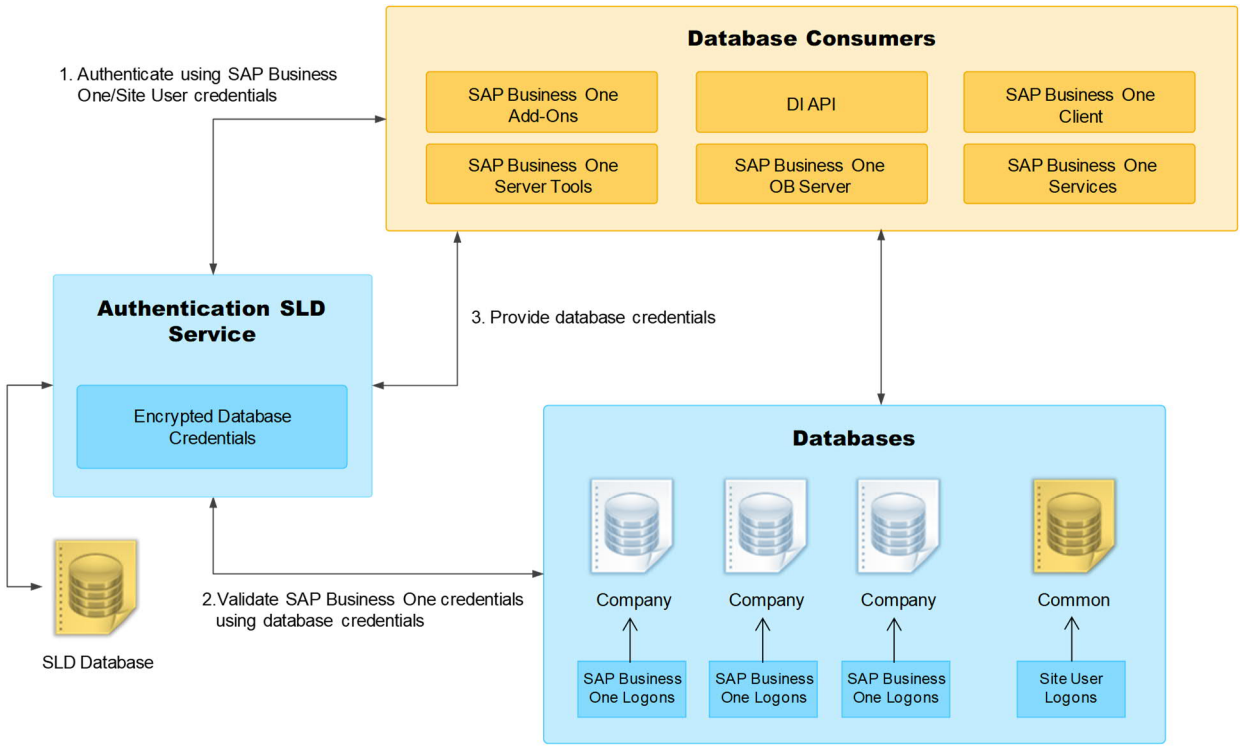
Once you have established your security policy, we recommend that you dedicate sufficient time and allocate ample resources to implement it and maintain the level of security that you require.

10.1 Technical Landscape

In SAP Business One 10.0, version for SAP HANA, database credentials are saved in SLD, which serves as the security server.

Database credentials are obtained by supplying SAP Business One, version for SAP HANA logon credentials for authentication against the SLD service. Upon successful authentication, connections to databases are established using database credentials from the SLD service.

The figure below is a representation of the security workflow for SAP Business One, version for SAP HANA.



SAP Business One, version for SAP HANA Security Landscape

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10.2 User Administration and Authentication

This section provides an overview of how SAP Business One, version for SAP HANA supports an integrated approach to user management and authentication.

The table below shows the tools to use for user management and user administration with SAP Business One, version for SAP HANA.

User Management Tools

Tool	Detailed Description	Prerequisites
System Landscape Directory	The System Landscape Directory (SLD) control center is a central workplace where you perform various administrative tasks. For more information, see Working with the System Landscape Directory.	You have the account information for the site superuser (B1SiteUser).
SAP Business One Client	The application executable. For more information, see Client Components.	You have the SAP Business One user account with the user-related permissions.

10.2.1 User Types

It is necessary to specify different security policies for different types of users. For example, your policy may specify that individual users who perform tasks interactively have to change their passwords on a regular basis, but not users who process job runs. Therefore, SAP classifies these types of users in the application as follows:

10.2.1.1 SAP Business One Site Users

The site user is not a company user type that can log on to the SAP Business One client application, version for SAP HANA, but serves as site-level authentication for performing the following activities:

- Creating new companies
- Installing or upgrading SAP Business One, version for SAP HANA
- Configuring security settings in the SLD service
- Registering database instances in the SLD service

For more information, see Managing Site Users.

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10.2.1.2 SAP Business One Company User

Superusers

A superuser can access all windows and perform all functions in SAP Business One and can limit the authorizations of users that are not superusers. When you create a company, some predefined superusers exist in the system. For more information about superusers, see Standard Users.

Regular Users

You can define company regular users according to different business role requirements.

The responsibilities of a regular user are to perform the relevant business work in the SAP Business One, version for SAP HANA application.

10.2.1.3 Microsoft Windows Domain User

You can assign appropriate Microsoft Windows domain users as SAP Business One site users to perform administrative tasks that require fewer privileges in the System Landscape Directory. One site user can be bound with more than one Windows domain accounts. For more information, see Managing Site Users.

You can also bind an SAP Business One company user account to a Microsoft Windows domain account. After starting the SAP Business One, version for SAP HANA client, users can start using the application without being prompted to enter their SAP Business One logon credentials. One Windows domain account can be bound with more than one companies. But in one company, one Windows domain account can be bound with only one company user. For more information about the Microsoft Windows domain account authentication enablement, see Microsoft Windows Domain Account Authentication Enablement.

10.2.2 Standard Users

The table below shows the standard users that are necessary for operating SAP Business One, version for SAP HANA.

Recommendation

For security reasons, we recommend that at the first logon, you create another standard user account, which is assigned only necessary authorizations, as a substitute for the `default standard` user, and disable the default user.

System	User ID	Type	Password	Description
System Landscape Directory	`B1SiteUser`	Site user	The password defined during the	It serves as site-level authentication for performing various administrative tasks with the functions as follows:

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System	User ID	Type	Password	Description
			SLD installation process.	• Life cycle management: installation, upgrade, uninstallation • Configuring services installed on Windows (for example, Workflow service) • Company creation • For more information, see Managing Site Users.
SAP Business One Company	`Manager`	Company superuser	**`manager:`** All except Hebrew `מנהל:` Only for Hebrew	When you create a company, a predefined superuser named `manager` exists in the system. Due to the password policy, you must change the password of the `manager` user at the first logon. You can also create new superusers. The responsibilities of a superuser include: • Defining users in companies and setting user permissions • Assigning licenses • Configuring password policy at the company level • Upgrading companies
	`AlertSvc`	Company superuser	A randomly generated password. You can change it when logging on with another superuser account.	The `AlertSvc` user is a default technical user used for the alert service. This technical user is used for database connection and not intended for any business transactions. You do not have to assign a license to this technical user, and we recommend that you don't. You can change the default user to another user to execute the alerts. **Note** If you want to use a user different from the default user `AlertSvc`, you must ensure the user is created in all the companies. Otherwise, all the alert settings are ineffective for the companies missing this user. For security reasons, we recommend that at the first logon you change the default

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System	User ID	Type	Password	Description
				user to another user and disable the `AlertSvc` user. For more information about changing the default user `AlertSvc`, see Alert and Scheduling Settings.
	`B1i`	Company superuser	A randomly generated password. You can change it when logging on with another superuser account.	The `B1i` user is a default technical user for the integration framework. The integration framework uses the `B1i` user to connect to SAP Business One (for example, to check authentication when using the mobile solution). For more information, see Technical B1i User.
	`Workflow`	Company superuser	A randomly generated password. You can change it when logging on with another superuser account.	The `Workflow` user is a default technical user used for the workflow service. This technical user is used for logging in to DI and running the workflow script. For more information about activating the `Workflow` user in SAP Business One Client, see How to Configure the Workflow Service and Design the Workflow Process Templates at SAP Help Portal.
	`Support`	Company superuser	A randomly generated password. You can change it when logging on with another superuser account.	A `Support` user (user code: `Support`) is created upon the installation or upgrade of SAP Business One companies. This new user is provided for support and consulting purposes. The `Support` user does not require a license to access the system. This can minimize the disruption to business where a user may previously have needed to log off the system to free up a license for support. **Note** Certain advanced features (such as the analytics features) are not available for the `Support` user. While you do not need to assign a license to the `Support` user, it has the same access rights as those of a Professional

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System	User ID	Type	Password	Description
				User license. Therefore, strict usage rules are applied to the `Support` user to prevent misuse, as follows: • After logging on to the company using the `Support` user account, the user must identify him/herself by entering his/her real name and selecting a login reason in the Support User Login window. • The `Support` user account can only be used if the remote support platform (RSP) is active (an RSP system status report was uploaded within the last 7 days). • The usage of the `Support` user is recorded (including the real name and the login reason). You can review the log records in the Support User Log window under Administration -> License. **Note** If you had already created a user account `Support` before upgrading companies, the `Support` user will have the features described above after the upgrade. The licenses assigned to the original user account, the password and all other settings for the original user account remain unchanged. You can transfer any license assignments of this account to another user because they are no longer required by the `Support` user.

10.2.3 User Management

This section provides an overview of user administration within SAP Business One, version for SAP HANA.

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10.2.3.1 Site User Management

The site user account serves as site-level authentication for performing various administrative tasks. This section provides information about how to change the site user password and how to assign a Windows domain user as a less-privileged site user.

10.2.3.1.1 Password Encryption

In SAP Business One, version for SAP HANA, a strong algorithm is used for data encryption and decryption. The site user ID and password are encrypted / hashed and saved in the System Landscape Directory.

For security reasons, we recommend that the site user password be a strong password that has the following characteristics:

- Contains alphabetic, numeric, and special characters
- Is at least seven characters in length
- Is NOT a common word or name
- Does NOT contain a name or user name
- Is significantly different from previous passwords

> **Recommendation**
>
> If you have enabled single sign-on (SSO) functionality, we recommend that you bind the SAP Business One site user with a domain user. Then, when you start the SAP Business One System Landscape Directory control center, you can enter the control center without being prompted to enter the logon credentials.
>
> Alternatively, for security reason, we recommend that you change the length of the site user password to a longer one (for example, twenty characters in length) since you do not need to use the site user password frequently.

You can change the site user password using the System Landscape Directory. To do so, proceed as follows:

1. To access the SLD service, in a Web browser, navigate to the following URL:

   `https://<Server Address>:<Port>/ControlCenter`
2. In the logon page, enter the site user name (`B1SiteUser`) and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.
3. On the Security Settings tab, in the Site Password area, choose Change.
4. In the Change Site Password window, enter the current password, and then enter and confirm the new password you want to use.
5. To save the new password, choose OK.

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10.2.3.1.2 Domain Users as Less-Privileged Site Users

In the System Landscape Directory control center, you can assign a Windows domain user as a less-privileged site user. For more information, see Managing Site Users.

10.2.3.2 Company User Management

In SAP Business One, you can define, change or delete company users or change passwords according to different business role requirements.

10.2.3.2.1 Defining Users

To define users, start the SAP Business One, version for SAP HANA client and navigate to the Users-Setup window. For more information about defining users, see the SAP Business One, version for SAP HANA online help.

10.2.3.2.2 Updating Users

Procedure

To update a defined user, do the following:

1. Log on to the SAP Business One, version for SAP HANA client.
2. From the SAP Business One Main Menu, choose Administration → Setup → General → Users.
3. In the Users-Setup window, click the Find button on the toolbar and switch to Find mode.
4. Navigate to the user you want to update.
5. Update the user's information and click the Update button.

10.2.3.2.3 Deleting Users

Prerequisites

- You have removed the licenses assigned to the user you want to delete. For more information, see the SAP Business One, version for SAP HANA online help.
- You have unbound the employee associated to the user you want to delete. For more information, see the SAP Business One, version for SAP HANA online help.

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Procedure

To delete a defined user, do the following:

1. Log on to the SAP Business One, version for SAP HANA client.
2. From the SAP Business One Main Menu, choose Administration → Setup → General → Users.
3. In the Users-Setup window, click the Find button on the toolbar and switch to Find mode.
4. Navigate to the user you want to delete.
5. Right-click anywhere in the Users-Setup window and choose the Remove button.

   The user is deleted. It is not possible to add a new user with the same user code.

   > **Note**
   >
   > When you remove a company regular user in SAP Business One, the user is just marked as Removed but is not completely deleted from the database. If you have any requirement for data protection and privacy, see How to Manage the Protection of Personal Data in SAP Business One on SAP Help Portal.

10.2.3.2.4 Changing Passwords

As standard practice, SAP Business One, version for SAP HANA authenticates users based on their user accounts and passwords.

You can change your password at any time. In addition, the application checks the password validity of each logon attempt according to the selected security level.

> **Note**
>
> To change your password, choose Administration → Setup → General → Security → Change Password.

If you are required to change your password, the application displays the Change Password window. You must change the password to log on.

The new password must comply with the settings of the selected security level, containing at least:

- x characters
- x lowercase
- x uppercase
- x digits
- x non-alphanumeric

The application saves passwords in the database in hashed form. The last n passwords are also hashed. When appraising a new password, the application first hashes and then compares it with the saved ones.

The password policy defines global guidelines and rules for password settings, such as the following:

- Time interval between password changes
- Required and forbidden letters and characters
- Minimum required number of characters
- Number of logon attempts before the system locks the user account

The password policy improves the security of SAP Business One, version for SAP HANA and enables administrators to apply the required security level for their organization.

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> **Note**
>
> Only a superuser can change the security level. You can use the Password Administration window to change the security level. To open the window, choose Administration → Setup → General → Security → Password Administration.

SAP Business One, version for SAP HANA supports the following approaches to raising the security level of user authentication:

- Increase the complexity of the password.
- Increase the frequency of password changes.

For more information about working with passwords in SAP Business One, version for SAP HANA, see SAP Note 978292.

10.2.3.3 Microsoft Windows Domain Account Authentication Enablement

SAP Business One, version for SAP HANA supports single sign-on (SSO) functionality. You can bind an SAP Business One user account to a Microsoft Windows domain account.

> **Note**
>
> SAP Business One supports only Microsoft Windows accounts to be bound with SAP Business One user accounts.

After starting the SAP Business One, version for SAP HANA client, users can start using the application without being prompted to enter their SAP Business One logon credentials.

> **Caution**
>
> To be able to use the single sign-on function, you must have specified a domain user and password during installation of the System Landscape Directory on the SAP HANA server. Otherwise, even if you have performed all the following steps to set up single sign-on, you still cannot single sign-on to SAP Business One using domain user accounts.

To use the single sign-on function, you must complete the following steps:

1. Register a Service Principal Name (SPN).
2. Bind SAP Business One users to Microsoft Windows accounts.
3. Enable the single sign-on function in the SLD.

10.2.3.3.1 Registering the Service Principal Name

To enable Windows domain single sign-on with SAP Business One, you must register a service principal name (SPN) for the SLD service. The SPN can be registered before or after you install the System Landscape Directory. Nevertheless, if you register the SPN after the installation, the domain user account used for installation must be used for SPN registration.

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Recommendation

As this domain user is a service user that functions purely for the purpose of setting up single sign-on, we highly recommend that you create a new domain user and do not assign any additional privileges to the user other than the logon privilege. In addition, keep the user's password unchanged after enabling single sign-on; otherwise, single sign-on may stop working.

Prerequisites

You are a domain administrator or have been delegated the appropriate authority.

Procedure

1. On a Windows computer, run the command prompt as an administrator.
2. Run the following `setspn` command: **`setspn -U -A <SPN> <Domain User Name>`**.

   An example of an SPN is **`SLD/Domain.com`**.

10.2.3.3.2 Binding SAP Business One Users to Microsoft Windows Accounts

After you bind SAP Business One users to Microsoft Windows domain accounts, the users can log on to SAP Business One, version for SAP HANA without specifying their user credentials.

Manual Binding

The following procedure describes how to bind SAP Business One users individually:

1. From the SAP Business One Main Menu, choose Administration → Setup → General → Users.
2. In the Users - Setup window, in the User Code field, specify the user that you want to bind.
3. In the Bind with Microsoft Windows Account field, enter the domain and user name of the Microsoft Windows domain account to which you want to bind the user.

   Caution

   The domain user name is case sensitive. Therefore, you must ensure that you enter the domain user name exactly as it was created in the domain, including the letter case.
4. Choose Update.

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10.2.3.3.3 Copying User Mappings Between Companies

You can copy user mappings between two companies provided that the same user exists in both companies. Each user is identified by the user code (not the user name).

Typical scenarios for this function are as follows:

- You have moved your company schema from a test system to a productive system.
- You have moved your company schema to another server.
- You have imported and renamed your company schema (the old schema also exists on the same server).

To copy user mappings, do the following:

1. Log on to the System Landscape Directory in a Web browser.
2. On the Security Settings tab, in the Authentication section, choose Copy User Mappings.
3. In the Copy User Mappings Between Companies window, specify the source and target companies.

   > **Note**
   >
   > To be available for selection, the servers must be registered in the System Landscape Directory. However, the company schema versions do not matter.

4. To display SAP Business One users whose mappings can be copied, choose Check.

   If a user exists only in the source company but is bound to a domain account, the user is displayed as missing in the target company. However, if a user exists only in the target company, the user is not displayed.

5. To copy user mappings to the target company, choose Copy.

10.2.3.3.4 Enabling Single Sign-On

After enabling SSO, the Choose Company window displays only the companies to which your Windows account is bound.

> **Caution**
>
> Enabling SSO in the SLD activates this functionality for all companies in the landscape.

Procedure

1. In a Web browser, navigate to the following URL: `https://<Server Address>:<Port>/ControlCenter`.

   A Web browser opens and displays the logon page for the SLD service.

2. In the logon page of the Web browser, enter the site user name and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.

3. On the Security Settings tab, select the checkbox Enable Single Sign On (Log On Using Windows Domain Account).

   If you did not choose to activate the single sign-on function during installation of the System Landscape Directory, this checkbox is deselected and not editable.

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4. If you want to prevent logons using SAP Business One user accounts and enforce single sign-on using domain accounts, select the checkbox Disable logons with SAP Business One User Accounts.

   If you keep this checkbox deselected, users can log on using both SAP Business One user accounts and Windows domain accounts.

5. Choose Update.

Result

Each user must confirm the binding upon first logon. After confirmation, the user can log on to SAP Business One, version for SAP HANA using the bound Windows account.

> **Caution**
>
> The first time you single sign-on to SAP Business One using your domain user account, ensure you have logged on to the Windows system using the correct domain user name (case sensitive). If not, log off and then log on again using the correct user name; otherwise, single sign-on will not work.

If the system administrator has not disabled logons using SAP Business One user accounts, you can still log on with an SAP Business One user account (which does not have to be bound to a Windows account), as below:

1. In the logon window, deselect the Logon with Windows Account checkbox (or in the Choose Company window, deselect the checkbox Log on with Current Domain User).
2. Manually enter the company schema name.
3. Enter your SAP Business One user name and password.
4. Choose OK.

> **Caution**
>
> If the system administrator has disabled logons using SAP Business One user accounts, you must bind each SAP Business One user to a Windows account and each user must confirm the binding; otherwise, logon is not possible.

10.2.4 User Authentication

As standard practice, SAP Business One, version for SAP HANA authenticates users based on their user accounts and passwords. You can change your password at any time. For more information about working with passwords in SAP Business One, version for SAP HANA, see Changing Password.

Simultaneously, SAP Business One, version for SAP HANA supports single sign-on (SSO) functionality by using the following approaches:

- On Web pages, SSO is accomplished using Security Assertion Markup Language (SAML) 2.0 and the System Landscape Directory (SLD) is the Identity Provider.

  > **Example**
  >
  > In a Web browser, when you navigate to the SAP Business One job service URL, **`http://<Server Address>:<Port>/job`**, you are redirected to the SLD logon page. After finishing the authentication on the SLD logon, you go back to the previous job service page.

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- On native applications, for example, on the SAP Business One client, if you enabled Microsoft Windows domain account authentication, SSO is accomplished using Kerberos. For more information about binding an SAP Business One user account to a Microsoft Windows domain account and enabling single sign-on, see Microsoft Windows Domain Account Authentication Enablement.

10.3 Authorization

Authorizations allow users to view, create, and update documents that you assign to them, according to data ownership definitions. By default, a new user has no authorizations. Each user can have only one manager who assigns permissions.

You can define users as either regular users or superusers.

- Regular Users:
  - Can perform certain actions, for example, award discounts, change prices, or access confidential accounts, with the proper authorizations.
  - Cannot assign authorizations to other users.
- Superusers:
  - Have full and unrestricted authorization to access users in the system, apart from to their own logins.
  - Automatically have full authorization to access all functions in the system.
  - Can define authorizations and permissions for other users.

For more information about SAP Business One user authorization, see the SAP Business One online help.

10.4 Network and Communication Security

We strongly recommend installing SAP Business One in trusted environments only (corporate LAN with firewall protection).

To work with SAP Business One outside your corporate networks, you can use the SAP Business One Browser Access service. Alternatively, you can use Citrix or similar third-party solutions. For more information, see Enabling External Access to SAP Business One Services.

10.4.1 Communication Channels

TCP/IP provides the communication channels between the following:

Client Side	Server Side	Protocol Used
Agent of SAP Business One, version for SAP HANA clients	System landscape directory	HTTPS
Agent of SAP Business One, version for SAP HANA clients	The shared folder b1_shf	SAMBA

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Client Side	Server Side	Protocol Used
Agent of SAP Business One remote support platform	SAP Business One, version for SAP HANA server	ODBC
Browser access server	Company database	ODBC
Browser access server	System landscape directory	HTTPS
IM service	Company database	JDBC
Integration framework	Company database	JDBC
Integration framework	Integration framework database	JDBC
Integration framework	SAP Business One, version for SAP HANA license server	HTTPS
Integration framework	Service Layer	HTTPS
Job service	Company database	JDBC
Job service	Service Layer	HTTPS
Job service	SMTP server	SMTP
Job service	System landscape directory	HTTPS
Microsoft Excel	Excel report and Interactive analysis	MDX
Mobile service	Service Layer	HTTPS
Mobile service	System landscape directory	HTTPS
SAP Business One analytics powered by SAP HANA	SAP Business One, version for SAP HANA server	HTTPS
SAP Business One analytics powered by SAP HANA	Company database	JDBC
SAP Business One analytics powered by SAP HANA	Company database	MDX (just for the Excel report and Interactive analysis)
SAP Business One analytics powered by SAP HANA	Database of SAP Business One analytics powered by SAP HANA	JDBC
SAP Business One analytics powered by SAP HANA	System landscape directory	HTTPS
SAP Business One analytics powered by SAP HANA	SMTP server	SMTP
SAP Business One, version for SAP HANA clients	App framework	HTTPS
SAP Business One, version for SAP HANA clients	Company database	ODBC

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Client Side	Server Side	Protocol Used
SAP Business One, version for SAP HANA clients	IM service	HTTPS
SAP Business One, version for SAP HANA clients	SAP Business One analytics powered by SAP HANA	HTTPS
SAP Business One, version for SAP HANA clients	System landscape directory	HTTPS
SAP Business One, version for SAP HANA clients	The shared folder b1_shf	SAMBA
SAP Business One, version for SAP HANA clients	Workflow service	HTTPS
SAP Business One DI API	Company database	ODBC
SAP Business One DI API	System landscape directory	HTTPS
Service Layer	Company database	ODBC
Service Layer	System landscape directory	HTTPS
System landscape directory	Domain controller	LDAP, Kerberos
System landscape directory	Service unit database	JDBC
System landscape directory	System landscape directory database	JDBC (can be encrypted via SSL)
Third party add-on products	Service Layer	HTTPS
Web browser	App framework	HTTPS
Web browser	Browser access server	HTTPS
Web browser	Integration framework	HTTP or HTTPS
Web browser	SAP Business One analytics powered by SAP HANA	HTTPS
Web browser	System landscape directory	HTTPS
Web browser	Workflow service	HTTPS
Workflow service	Company database	JDBC

10.4.2 Configuring Services with Secure Network Connections

To make communication safer, we recommend that you configure the SAP Business One services with secure network connections.

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10.4.2.1 Tenant Databases

The default value of the first tenant database communication port depends on the SAP HANA instance number in the format of 3<SAP HANA instance number>15. If the instance number is 00, the first default tenant database communication port is 30015, and if the instance number is 01, the first default tenant database communication port is 30115. To enable the secure database connection, see Database Connection Security.

10.4.2.2 Server Tools

10.4.2.2.1 Components in Shared Tomcat

In SAP Business One, version for SAP HANA, the following components share the same Tomcat:

- System Landscape Directory
- License Service
- Analytics Platform
- Backup Service
- Job Service
- Mobile Service
- Extension Manager

You can configure the components with the same network security settings as follows:

- The default port is 40000. This port should be exposed to the Internet if you need to use some SAP Business One components on Internet.
- The components enforce secure connections via HTTPS encryption

  By default, the supported TLS versions are 1.0, 1.1 and 1.2. The default TLS cipher suites are listed as follows:
  - TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,
  - TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA384,
  - TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA,
  - TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,
  - TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA384,
  - TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,
  - TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA256,
  - TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,
  - TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA,
  - TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA256,
  - TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,
  - TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA,
  - TLS_RSA_WITH_AES_128_GCM_SHA256,
  - TLS_RSA_WITH_AES_128_GCM_SHA384,

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- TLS_RSA_WITH_AES_128_GCM_SHA,
- TLS_RSA_WITH_AES_128_CBC_SHA256,
- TLS_RSA_WITH_AES_128_CBC_SHA384,
- TLS_RSA_WITH_AES_128_CBC_SHA,
- TLS_RSA_WITH_AES_256_GCM_SHA256,
- TLS_RSA_WITH_AES_256_GCM_SHA384,
- TLS_RSA_WITH_AES_256_GCM_SHA,
- TLS_RSA_WITH_AES_256_CBC_SHA256,
- TLS_RSA_WITH_AES_256_CBC_SHA384,
- TLS_RSA_WITH_AES_256_CBC_SHA

You can change TLS versions or cipher suites (If you intend to add new TLS versions or cipher suites, make sure that they are supported by java and Tomcat) according to your security requirements by changing the Tomcat configuration file `<install folder>\common\tomcat\conf\server.xml`. The configuration file will be overwritten when you reinstall or upgrade the component. Ensure that you change it back after the installation or upgrades.

The components need a valid PKCS 12 certificate to function properly. The default certificate option is a self-signed certificate. However, for security reasons, we strongly recommend that you specify a valid certificate during the installation process or change the certificate to a valid one after the installation.

10.4.2.2.2 System Landscape Directory

If you use the Windows account authentication, the System landscape Directory (SLD) connects the Windows domain controller with the LDAP protocol. You can configure the LDAP connection in a secure channel (LDAPs).

Prerequisites:

1. Your Windows domain controller has been configured for supporting the LDAPs connection.
2. Your LDAPs certificate has been exported.

Procedure

To import the LDAPs certificate to SAP JVM and enable the LDAPs, perform the following steps:

1. Import the LDAPs certificate to SAP JVM as follows:
    1. Copy the certificate to your local folder.
    2. Execute the following script:

    ```
    "/<Installation Folder>/SAPBusinessOne/Common/sapjvm_8/jre/bin/keytool" -importcert -alias "ldaps" -keystore "/<Installation Folder>/SAPBusinessOne/Common/sapjvm_8/jre/lib/security/cacerts" -storepass changeit -file "/home/LDAP.cer"
    ```
2. Enable the LDAPs as follows:
    1. Launch the SAP HANA studio and connect to the SLD database.

2. Run the following SQL statement:

```
insert into SecurityConfigs values (999999,'gss_secure_channel','true');
update SecurityConfigs set "VALUE"= 'FQDN of domain controller' where
"NAME"='gss_kdc_address'
```

3. Restart the SLD service.

To disable the LDAPs, perform the following steps:

1. Launch the SAP HANA studio and comment to the SLD database.
2. Run the following SQL statement:

```
update SecurityConfigs set "VALUE"= 'false' where "NAME"='gss_secure_channel'
```

3. Restart the SLD service.

10.4.2.2.3 Service Layer

The default port for SAP Business One System Service Layer load balancer is `50000`.According to the node number, the Service Layer opens the corresponding ports for load balancer members as follows:

- `50001`
- `50002`
- `50003`
- …

The Service Layer is for internal component calls only and you do not need to expose it to the Internet.

The service layer enforces secure connection via HTTPS encryption with TLS version 1.0 or 1.1 or 1.2, and the corresponding TLS cipher suite is `ECDH+AESGCM:ECDH+AES256:ECDH+AES128:RSA+AESGCM:RSA+AES:!aNULL:!MD5:!DSS`.

The Service Layer needs a valid X509 format certificate. The certificate is stored at:`<Installation Folder>/SAPBusinessOne/ServiceLayer/conf/server.crt` and the private key is stored at: `<Installation Folder>/SAPBusinessOne/ServiceLayer/conf/server.key`.

By default, the Service Layer uses a self-signed certificate. However, for security reasons, we strongly recommend that you specify a valid certificate during the installation process. Alternatively, you can manually change the certificate and private key, and then restart the Service Layer.

You can change TLS versions or cipher suites (If you intend to add new TLS versions or cipher suites, make sure that they are supported by Apache Http Server) according to your security requirements by changing the Apache HTTP Server configuration file (`<install folder>\conf\httpd.conf`). The configuration file will be overwritten when you reinstall or upgrade the component. Ensure that you change it back after the installation or upgrades.

10.4.2.2.4 Workflow

The default port for SAP Business One Workflow is `60000`. The workflow enforces secure connections via HTTPS encryption with TLS version 1.1 or 1.2. The corresponding TLS cipher suites are listed as follows:

- `TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,`

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- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA384,
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA384,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA256,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA,
- TLS_RSA_WITH_AES_128_GCM_SHA256,
- TLS_RSA_WITH_AES_128_GCM_SHA384,
- TLS_RSA_WITH_AES_128_GCM_SHA,
- TLS_RSA_WITH_AES_128_CBC_SHA256,
- TLS_RSA_WITH_AES_128_CBC_SHA384,
- TLS_RSA_WITH_AES_128_CBC_SHA,
- TLS_RSA_WITH_AES_256_GCM_SHA256,
- TLS_RSA_WITH_AES_256_GCM_SHA384,
- TLS_RSA_WITH_AES_256_GCM_SHA,
- TLS_RSA_WITH_AES_256_CBC_SHA256,
- TLS_RSA_WITH_AES_256_CBC_SHA384,
- TLS_RSA_WITH_AES_256_CBC_SHA

You can change TLS versions or cipher suites (If you intend to add new TLS versions or cipher suites, make sure that they are supported by java and Tomcat) according to your security requirements by changing the Tomcat configuration file (`<install folder>\Workflow\TomcatConfig\conf\server.xml`). The configuration file will be overwritten when you reinstall or upgrade the component. Ensure that you change it back after the installation or upgrades.

The default certificate option is a self-signed certificate. However, for security reasons, we strongly recommend that you specify a valid certificate during the installation process or change the certificate to a valid one after the installation.

10.4.2.3 Browser Access

The default port for SAP Business One Browser Access is `8100`. If you need to access SAP Business One services via Internet, you need to expose this port to the Internet.

The Browser Access enforces secure connection via HTTPS encryption with TLS version 1.1 or 1.2; the corresponding TLS cipher suites are listed as follows:

- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA384,
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA,

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- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA384,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA256,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA,
- TLS_RSA_WITH_AES_128_GCM_SHA256,
- TLS_RSA_WITH_AES_128_GCM_SHA384,
- TLS_RSA_WITH_AES_128_GCM_SHA,
- TLS_RSA_WITH_AES_128_CBC_SHA256,
- TLS_RSA_WITH_AES_128_CBC_SHA384,
- TLS_RSA_WITH_AES_128_CBC_SHA,
- TLS_RSA_WITH_AES_256_GCM_SHA256,
- TLS_RSA_WITH_AES_256_GCM_SHA384,
- TLS_RSA_WITH_AES_256_GCM_SHA,
- TLS_RSA_WITH_AES_256_CBC_SHA256,
- TLS_RSA_WITH_AES_256_CBC_SHA384,
- TLS_RSA_WITH_AES_256_CBC_SHA

You can change TLS versions or cipher suites (If you intend to add new TLS versions or cipher suites, make sure that they are supported by java and Tomcat) according to your security requirements by changing the Tomcat configuration file (`<install folder>\common\tomcat\conf\server.xml`). The configuration file will be overwritten when you reinstall or upgrade the component. Ensure that you change it back after the installation or upgrades.

The Browser Access needs a valid PKCS 12 certificate to function properly. The default certificate option is a self-signed certificate. However, for security reasons, we strongly recommend that you specify a valid certificate during the installation process.

10.4.2.4 Excel Report and Interactive Analysis

The default port for interactive analysis on the SAP HANA server is 39915. You can change the port by performing the following steps:

1. Log on to the Linux server as `root`.
2. In the command line terminal, open the configuration file `proxy.cfg` under path `<Installation path>/SAPBusinessOne/AnalyticsPlatform/TcpReverseProxy.`
3. Modify the parameter of `port_instance` to `xx`.
4. Restart the server, and the default port of 39915 will be changed to `3xx15`.

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We use TCP protocol for the network connection between the SAP HANA database and the Excel report and interactive analysis. For security reasons, we recommend that you enable TLS/SSL for the communication. For more information, see Excel Report and Interactive Analysis (Pivot Table Only).

10.4.2.5 Reverse Proxy

A reverse proxy works as an interchange between internal SAP Business One services and external clients. All the external clients send requests to the reverse proxy and the reverse proxy forwards their requests to the internal SAP Business One services. To handle external requests, we recommend that you deploy a reverse proxy rather than using NAT/PAT.

The default port for reverse proxy is 443.

The reverse proxy enforces secure connection via HTTPS encryption with TLS version 1.0 or 1.1 or 1.2 and the corresponding TLS cipher suite is `ECDHE-RSA-AES256-SHA384:AES256-SHA256:RC4:HIGH:!MD5:!aNULL:!EDH:!AESGCM`

For more information about handing external requests, see How to Deploy SAP Business One with Browser Access on SAP Help Portal.

10.4.2.6 App Framework

The default port for App Framework exposed from SAP HANA server is 4300.

10.4.2.7 Integration Framework

By default, the integration framework server uses port `8080` for HTTP and `8443` for HTTPS. You do not need to expose the port to the Internet.

If you choose the HTTPS connection, use TLS version 1.0 or 1.1 or 1.2; the corresponding TLS cipher suites are listed as follows:

- `TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,`
- `TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA384,`
- `TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA,`
- `TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,`
- `TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA384,`
- `TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,`
- `TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA256,`
- `TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,`
- `TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA,`
- `TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA256,`
- `TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,`
- `TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA,`

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- TLS_DHE_RSA_WITH_AES_128_GCM_SHA256,
- TLS_DHE_RSA_WITH_AES_128_GCM_SHA384,
- TLS_DHE_RSA_WITH_AES_128_GCM_SHA,
- TLS_DHE_RSA_WITH_AES_128_CBC_SHA256,
- TLS_DHE_RSA_WITH_AES_128_CBC_SHA384,
- TLS_DHE_RSA_WITH_AES_128_CBC_SHA,
- TLS_DHE_RSA_WITH_AES_256_GCM_SHA256,
- TLS_DHE_RSA_WITH_AES_256_GCM_SHA384,
- TLS_DHE_RSA_WITH_AES_256_GCM_SHA,
- TLS_DHE_RSA_WITH_AES_256_CBC_SHA256,
- TLS_DHE_RSA_WITH_AES_256_CBC_SHA384,
- TLS_DHE_RSA_WITH_AES_256_CBC_SHA,
- TLS_RSA_WITH_AES_128_GCM_SHA256,
- TLS_RSA_WITH_AES_128_GCM_SHA384,
- TLS_RSA_WITH_AES_128_GCM_SHA,
- TLS_RSA_WITH_AES_128_CBC_SHA256,
- TLS_RSA_WITH_AES_128_CBC_SHA384,
- TLS_RSA_WITH_AES_128_CBC_SHA,
- TLS_RSA_WITH_AES_256_GCM_SHA256,
- TLS_RSA_WITH_AES_256_GCM_SHA384,
- TLS_RSA_WITH_AES_256_GCM_SHA,
- TLS_RSA_WITH_AES_256_CBC_SHA256,
- TLS_RSA_WITH_AES_256_CBC_SHA384,
- TLS_RSA_WITH_AES_256_CBC_SHA

The integration framework service needs a valid JKS format certificate. The default certificate option is a self-signed certificate. However, for security reasons, we strongly recommend that you perform the following steps:

1. Disable the HTTP protocol by removing the following parameters from the Tomcat configuration file:

```
<Connector port="8080" protocol="HTTP/1.1" connectionTimeout="20000"
redirectPort="8443" enableLookups="false" server=" "/>
```

2. Restart the integration framework service.
3. Change the self-signed certificate to a valid one. For more information, see SAP Note 2405043.

> **Note**
>
> If you already have disabled the HTTP protocol or changed the port, check the protocol and port value in the table SLSPP of database SBO-COMMON (SBOCOMMON).

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10.4.3 Security Certificate Verification During SSL Communication

You can configure the security certificate verification during the SSL communication between SAP Business One services.

> **Note**
>
> In SAP Business One components, the hostname or FQDN must match the Common Name of the security certificate and exist in the Subject Alternative Name (SAN) of the security certificate.

10.4.3.1 Client Components

Procedure

Perform the following steps on all Windows machines:

1. Install all certificates for SAP Business One services by performing the following steps:
    1. Navigate to the certificate `.crt`.
    2. Click the certificate and open the Certificate window.
    3. On the General tab of the Certificate window, choose Install Certificate....

        The Certificate Import Wizard welcome window appears.
    4. In the welcome window, select Local Machine as the store location.
    5. In the Certificate Store window, select the radio button Place all certificates in the following store and choose Browse.
    6. In the Select Certificate Sore window, select the certificate store Trusted Root Certification Authorities, and choose OK.
    7. In the Certificate Store window, choose Next, and in the Certificate Import Wizard complete window, choose Finish.
2. Enable certificate verification in the Windows registry by performing the following steps:
    1. Open the Windows registry.
    2. Navigate to the registry key in the path `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAP Manage\SAP Business One`.

        If the registry key does not exist, you need to create it first.
    3. Add a DWORD value with the name of `ValidateSSLCertificate`.

        If the value already exists, you do not need to add it.
    4. Set the value of `ValidateSSLCertificate` to `1`.
    5. Go to the registry key in the path `HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\SAP\SAP Manage\SAP Business One`.

        If the registry key does not exist, you need to create it first.
    6. Add a DWORD value with the name of `ValidateSSLCertificate`

        If the value already exists, you do not need to add it.

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7. Set the value of `ValidateSSLCertificate` to **`1`**.

10.4.3.2 Service Layer

Procedure

1. Log on to the Service Layer server as `root`.
2. Navigate to the configuration directory of the Service Layer `<Installation Folder>/SAPBusinessOne/ServiceLayer/conf` (for example, `/opt/sap/SAPBusinessOne/ServiceLayer/conf`).
3. Open the configuration file `b1s.conf` and append the following parameter to enable the TLS certificate verification:

   `"VerifyTLSCertificate":true`
4. Check if `update-ca-certificates` is installed.
5. If `update-ca-certificates` is not installed, install it by running the following command:

   `zypper install update-ca-certificates`
6. Copy your certificate file in the format of `pem` (for example, **`sld_ca.pem`**) to `/etc/pki/trust/anchors/` or `/usr/share/pki/trust/anchors`.
7. Run the following command to update the certificates:

   `update-ca-certificates`
8. -Restart the Service Layer by running the following command:

`/etc/init.d/b1s restart`

10.4.3.3 Web Client

Procedure

1. Prepare a PKCS12 format keystore file, for example, **`keytool.exe -genkey -alias b1trust -keyalg RSA -keystore tust.p12 -keysize 2048 -storetype PKCS12`**.
2. Import all certificates that are used in SAP Business One Services (such as System Landscape Directory) into this keystore file, for example, **`keytool.exe" -import -trustcacerts -alias <servicename> -file <service.cer> -keystore tust.p12 -storetype PKCS12`**.
   - If there is a chain for the certificates, import all certificates on this chain into the keystore.
   - If you are using an IP address, hostname and FQDN for server configuration, you need to issue a new certificate that includes a Subject Alternative Name (SAN) for the IP address/hostname/FQDN, and then import the certificate into SAP Business One Server Tools. For more information about updating the certificates, see SAP Note 2046101.
3. Log on to the Linux server and open `<Installation Folder>/SAPBusinessOne/WebClient/startup.sh`.

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4. Insert the java parameters below for each java jar command line:

   -Dcom.sap.b1.ssl.trustStore=<path to keystore> -Dcom.sap.b1.ssl.trustStorePassword=<password>

   Example

   ```
   ${JAVAEXE} -Dcom.sap.b1.ssl.trustStore=<path to keystore> -Dcom.sap.b1.ssl.trustStorePassword=<password> -jar auth.jar > auth.txt 2>&1 &
   ```

5. Restart Web Client for SAP Business One.

10.4.3.4 Server Tools Components

You can enable the security certificate verification for the components in the server tools.

Procedure

1. Prepare a PKCS12 format keystore file, for example, **keytool.exe -genkey -alias b1trust -keyalg RSA -keystore tust.p12 -keysize 2048 -storetype PKCS12**.
2. Import all certificates that are used in SAP Business One Services (such as System Landscape Directory) into this keystore file, for example, **keytool.exe" -import -trustcacerts -alias <servicename> -file <service.cer> -keystore tust.p12 -storetype PKCS12**.
   - If there is a chain for the certificates, import all certificates on this chain into the keystore.
   - If you are using an IP address, hostname and FQDN for server configuration, you need to issue a new certificate that includes a Subject Alternative Name (SAN) for the IP address/hostname/FQDN, and then import the certificate into SAP Business One Server Tools. For more information about updating the certificates, see SAP Note 2046101.
3. Log on to the Linux server and open `/etc/init.d/sapb1servertools`.
4. Add the two lines below to `JAVA_OPTS`:
   - **-Dcom.sap.b1.ssl.trustStore=<path to keystore>**
   - **-Dcom.sap.b1.ssl.trustStorePassword=<password>**

   ```
   JAVA_OPTS="$JAVA_OPTS -Duser.country=US -Duser.language=en -Dfile.encoding=UTF-8 -Djava.awt.headless=true -Dcom.sap.b1.ssl.trustStore=<path to keystore> -Dcom.sap.b1.ssl.trustStorePassword=<password> -server -Xms128m -Xmx5120M -XX:MaxPermSize=256m"
   ```

5. Restart SAP Business One Server Tools

10.5 Data Storage Security

The security of the data saved in SAP Business One, version for SAP HANA is generally the responsibility of the database provider and your database administrator. As with your application infrastructure, most of the measures that you should take depend on your strategy and priorities.

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There are a few general measures, as well as database-specific measures, that you can take to increase the protection of your data.

10.5.1 Data Storage

In SAP Business One, version for SAP HANA, according to the different types and purposes, the data is stored in different databases, as follows:

- SLD Database

  The SLD database stores the SLD data and contains the persistent landscape information and security settings. The SLD database must be protected with the highest priority.
- Company Database

  The Company database stores business or transactional data.
- System Database (`SBOCOMMON`)

  The System database holds system data, version information, upgrade information, and shared data of each company.
- Shared Folder (`b1_shf`)

  The Shared folder contains central configuration data as well as installation files for various client components. It also stores the files used in business, for example, attachments, templates and so on.
- The Common database for SAP Business One Analytics Powered by SAP HANA
- The database for SAP Business One integration framework
- The default database name is `IFSERV`. You can define a new name when installing the integration framework.

10.5.2 Data Encryption

10.5.2.1 System Landscape Directory Data Encryption

The sensitive data in the System Landscape Directory is encrypted. We strongly recommend that you follow the instructions as following.

- After installing the System Landscape Directory, you enable the encryption key of the sensitive data in the SLD. For more information, see Enabling and Updating Encryption Keys for the Data in System Landscape Directory.
- You regularly update the encryption key and safeguard the encryption key.

10.5.2.1.1 Enabling and Updating Encryption Keys for the Data in System Landscape Directory

You can encrypt data in your System Landscape Directory using a dynamic key.

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Procedure

1. Log on to the Linux server as `root`.
2. In a command line terminal, run the following command to stop the server tools:

   ```
   /etc/init.d/sapb1servertools stop
   ```
3. Navigate to the file on the server under the directory `<Installation Folder>/ServerTools/SLD/tools` (for example, `/opt/sap/SAPBusinessOne/ServerTools/SLD/tools`).
4. Run the following command:

   ```
   sh dynamic_key_control.sh -action on
   ```
5. Specify the path of the SLD database backup directory which is on the database server.

   For example, **`/home/dbbk`**
6. Specify the path of the keystore backup directory.

   For example, **`/tmp/keys`**
7. Specify the keystore password and confirm the password.

   Caution

   You must safeguard the keystore generated in the directory and remember the password. For example, you can copy the keystore to other hardware storages. Otherwise, if the SLD server hardware is damaged, the encrypted data cannot be restored.
8. If you use the high availability mode for the SLD, you need to copy the dynamic key to all the other SLD nodes by performing the following steps:
   1. Run the following command:

      ```
      sh dynamic_key_control.sh -action copy
      ```
   2. Enter the path to the keystore file.

      For example, **`/tmp/keys/SLD.KEYSTORE.NEW`**
   3. Enter the password you defined in step 7.
9. Run the following command to restart the server tools:

   ```
   /etc/init.d/sapb1servertools restart
   ```

10.5.2.2 Company Data Encryption

The sensitive company data is encrypted. We strongly recommend that you follow the instructions as follows:

- You use the dynamic key to encrypt your company database. For more information, see Enabling Dynamic Encryption Keys for the Data in Company Databases.
- You regularly update the dynamic key.
- When you enable or update the dynamic key, ensure that you keep the System Landscape Directory database safe.

  Caution

  If the SLD database is damaged (for example, the database is lost or the hardware is broken), the encryption key of the company database will be lost.

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10.5.3 Backup Policy

To safeguard your data on the SAP HANA database, you must follow the relevant instructions in the SAP HANA Administration Guide at http://help.sap.com/hana_platform. In addition, we recommend that you set up a backup policy to regularly back up the entire SAP HANA instance and export each company schema.

To back up an SAP HANA instance, you need to manually create a cron job, as described in Backing Up SAP HANA Instance Regularly. To export a company schema, you can use the backup service provided by SAP Business One.

> **Note**
>
> For more information on using the remote support platform for server backup and company schema export, see SAP Note 2157386.

> **Note**
>
> You must set the correct sudo permission (at least 4755) on the installer script to make the backup service executable To do this, perform the following steps:

1. Log on to the server as `root`.
2. Check the sudo command permission by running the following command:

   ```
   stat -c "%a" /usr/bin/sudo
   ```
3. Set the sudo permission by running the following command:

   ```
   chmod 4755 /usr/bin/sudo
   ```

10.5.3.1 Backing Up SAP HANA Instance Regularly

We recommend that you set up a backup schedule for the entire SAP HANA instance. In case of database failure, you can recover the instance. For more information about the regular auto-backup for an SAP HANA instance, see SAP Note 1950261.

> **Note**
>
> With the back service, you can also manually back up the SAP HANA server instances in the System Landscape Directory.
>
> As of release 9.1 PL11, the backup service also supports backup of remote SAP HANA database servers. The backup files are all stored on the machine where the backup service is installed.

10.5.3.2 Exporting Company Schemas

You can use the backup service to export company schemas, import company schemas, and make regular export schedules.

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Prerequisites

- You have installed the backup service on the SAP HANA database server.
- You have logged on to the System Landscape Directory in a Web browser (URL: **`https://<SLD Server Address>:<SLD Port>/ControlCenter`**).

> **Note**
>
> For more information about exporting/importing company schemas, see SAP Note 2404319.

10.5.3.2.1 Manually Exporting Company Schemas

Procedure

1. In the System Landscape Directory, on the Servers and Companies tab, in the Servers section, select the server on which you want to perform export operations for a company schema.
2. In the Companies section, select the company for which you want to perform export operations.
3. Choose Export Schema.
4. In the Export Schema window, choose OK.

> **Note**
>
> If the company schema is being exported in the background or you have already started to import a schema to replace it, you will have to wait for the process to complete before you can choose OK.

Result

In the System Landscape Directory, on the Servers and Companies tab, in the Companies section, the following information is updated for the selected company:

- Export/Import Status: Displays the export result.
- Last Export/Import: Updated with the finish time of the export.
- Last Successful Export: Updated only if the export is successful.

On the Linux server, you can find the schema export at `<Backup Location>/<Server_Port>/<SID>/<Schema Name>`. The naming convention for the schema export is `bck_<Timestamp>`. Depending on your setting during the installation of the backup service, the schema export may or may not be compressed in a zip file. The `bck_actual` symbol link points to the latest schema export.

To review the log for the export operations, select the company and choose Show Export Log.

10.5.3.2.2 Creating Export Schedules for Company Schemas

You can define a schedule for exporting each company schema regularly.

Procedure

1. In the System Landscape Directory, on the Servers and Companies tab, in the Servers section, select the server on which you want to perform export operations for a company schema.
2. In the Companies section, select the company for which you want to perform export operations.
3. Choose Schedule Export.
4. In the Schedule Export window, define the export schedule.

   The company schema will be exported according to the specified frequency and time. By default, no export schedule is set for any company schema.
5. To save the schedule, choose OK.

Result

In the System Landscape Directory, on the Servers and Companies tab, in the Companies section, the Export Schedule field is updated for the selected company.

The company schema now runs on the defined export schedule. For more information, see the descriptions in the Result section of Manually Exporting Company Schemas.

10.5.3.2.3 Importing Company Schemas

You can import a company schema either under the original name or under a different name.

The export and import operations are based on SQL statements. You can manually execute these SQL statements in the SAP HANA studio to export or import a schema (these procedures are introduced in the following sections).

If you want to manually import a company schema, do not use the `with replace` option, for example, **`import <Schema Name>."*" as binary from '<Backup Folder>/bck_actual' with replace`**. Company schemas usually reference objects in the `SBOCOMMON` schema. Using the `with replace` option would overwrite the contents of the referenced objects in `SBOCOMMON` and may cause problems. Therefore, for manual import, you must always use the `with ignore existing` option.

In addition, the following fields in the System Landscape Directory reflect only the status of operations invoked by the backup service (in other words, export or import operations triggered by SQL queries in the SAP HANA studio do not update these fields):

- Export / Import Status
- Last Export / Import
- Last Successful Export

Importing Company Schemas Under Original Names

Procedure

1. In the System Landscape Directory, on the Servers and Companies tab, in the Servers section, select the server on which you want to perform import operations.
2. Choose Import Schema.

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3. In the Import Schema window, in the Source section, select a source schema and then an export.
4. To start the import process, choose OK.

Result

This operation is equal to the following SQL statement:

```
drop schema <Schema Name>;
import <Schema Name>."*" as binary from '<Backup Folder>/<Backup>' with ignore existing threads 10;
```

Data in the existing schema is completely replaced with data in the specified schema export.

The Export/Import Status and Last Export/Import fields for the company are updated with the import status and time, respectively. To review the schema import log, select the company and choose Show Export Log.

Importing Company Schemas Under Different Names

You can use the following characters for a company schema name:

- Underscore (_)
- A-Z
- 0-9

Note that lowercase English letters and spaces are not allowed. In addition, the schema name must start with A-Z.

Procedure

1. In the System Landscape Directory, on the Servers and Companies tab, in the Servers section, select the server on which you want to perform import operations.
2. Choose Import Schema.
3. In the Import Schema window, in the Source section, select a source schema and then an export.
4. In the Destination section, do the following:
   - Select the Rename Target Schema checkbox.
   - In the Target Schema field, enter a new name.

     Note

     If a schema with the specified new name already exists on the SAP HANA database server, before the import command is executed, you will be prompted to confirm whether or not you want to overwrite the existing schema.
5. To start the import process, choose OK.

Result

This operation is equal to the following SQL statement:

```
import <Schema Name>."*" as binary from '<Backup Folder>/<Backup File>' with ignore existing threads 10 rename schema "<Schema Name>" to "<Schema New Name>";
```

The specified schema is imported into the SAP HANA database and renamed as specified. The old company schema still exists.

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Example

```
import SBODEMOUS."*" as binary from
'/usr/hana/shared/backup_service/backups/HANAServer_30015/NDB/SBODEMOUS/bck_actu
al' with ignore existing threads 10 rename schema "SBODEMOUS" to "SBODEMOUS2";
```

The latest backup of company database SBODEMOUS is imported into the SAP HANA database server and renamed as SBODEMOUS2. The old company schema SBODEMOUS still exists.

The Export/Import Status and Last Export/Import fields for the company are updated with the import status and time, respectively. To review the log, select the company and choose Show Export Log.

10.5.4 Exporting Configuration Files

To secure your data, we recommend that you export your security configuration file right after you finish installing the server tools (Linux) and the SAP Business One server, version for SAP HANA.

The configuration file contains the following important information:

- Site user password
- Database information
- Algorithm information

To export the security configuration file, proceed as follows:

1. To access the SLD service, in a Web browser, navigate to the following URL:

   ```
   http://<Server Address>:<Port>/ControlCenter
   ```

2. In the logon page, enter the site user name (`B1SiteUser`) and password, and then choose Log On.

   Note

   The site user name is case sensitive.

3. On the Security Settings tab, in the Configuration Import & Export area, choose Export Configuration File.

   Caution

   The site user password is required if you later import the security configuration file to restore the configured security settings. Thus, keep a record of the site user password when you are exporting the configuration file, especially if you want to change the site user password after the configuration file is exported.

10.5.5 Importing Configuration Files

If the server on which you install the SLD service crashes or is corrupted, you must restore all the security settings after the new license server is started.

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Prerequisites

- You have a record of your old security configuration file.
- You have placed the appropriate configuration file on the server under the directory: `<SLD Installation Folder>/Common/SLD/incoming/` (default: `/opt/sap/SAPBusinessOne/Common/SLD/incoming/`).

Procedure

1. To access the SLD service, in a Web browser, navigate to the following URL:

   `http://<Server Address>:<Port>/ControlCenter`
2. In the logon page, enter the site user name (`B1SiteUser`) and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.
3. On the Security Settings tab, in the Configuration Import & Export area, choose Import Configuration File.
4. In the Import Configuration File window, do the following:
   1. Select the configuration file that you want to import.
   2. In the Site User Password for Export field, specify the site user password you had when the configuration file was exported.
   3. To import the file, choose OK.

      > **Note**
      >
      > The exported configuration files use hardware-specific encryption. Therefore, you cannot import the configuration file to another server.

10.5.6 Backing Up and Restoring the License Assignment

To secure your data, we recommend that you back up your license assignment after you finish installing the server tools (Linux) and the SAP Business One server, version for SAP HANA.

If the server on which you install the server tools crashes or is corrupted, you must restore the license assignment after the new license server is started.

Procedure

Backing Up the License Assignment

1. Stop the server tools.
2. Copy the license assignment file `B1Upf.xml` in the path `/usr/sap/SAPBusinessOne/ServerTools/License/webapps/lib` to the backup storage.

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3. Copy the license files, such as `B1LicenseFile-<installation number>.txt` in the path `/usr/sap/SAPBusinessOne/ServerTools/License/webapps/lib` to the backup storage.
4. Start the server tools

Restoring the License Assignment

1. Stop the server tools.
2. Copy the license assignment file `B1Upf.xml` from the backup storage to the installation folder `/usr/sap/SAPBusinessOne/ServerTools/License/webapps/lib.`
3. Copy the license files, such as `B1LicenseFile-<installation number>.txt` from the backup storage to the installation folder `/usr/sap/SAPBusinessOne/ServerTools/License/webapps/lib.`
4. Start the server tools

10.5.7 Configuration Logs and User Settings

In SAP Business One, version for SAP HANA, configuration changes are logged in files formatted as `xxx.pidxxxxx` (`xxxxx` after `pid` can be the date, such as `20100325`, so that you can find the latest log file) under `%ProgramData%\SAP\SAP Business One\Log\SAP Business One\%USERNAME%\BusinessOne`.

The configuration changes include the following:

- Adding or removing users
- Changing a user to a superuser or non-superuser
- Changing user passwords
- Changing user permissions
- Changing password policy
- Changing company details

> **Note**
>
> To find the logs containing changes to company details, do the following:
>
> 1. From the SAP Business One Main Menu, choose Administration → System Initialization → Company Details.
> 2. In the menu bar, choose Tools → Change Log....

However, the following configurations cannot be logged:

- Changing data ownership authorizations
- Changing data ownership exceptions
- Changing license settings

If you fail to log on to SAP Business One, version for SAP HANA, the log is recorded in the Event Viewer. To access the event viewer, choose Start → Control Panel → Administrative Tools → Event Viewer.

Any specific user settings are saved in a file named `b1-current-user.xml` under `%UserProfile%\AppData\Local\SAP\SAP Business One\Log\BusinessOne`. In this situation, if a user

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changes his or her settings in SAP Business One, version for SAP HANA, the changes are saved in this folder and do not affect other users' settings.

The System Landscape Directory (SLD) logs on the Linux machine: `/var/log/SAPBusinessOne/ServerTools/SLD.`

10.6 Database Authentication

The default database administrator user SYSTEM has full authorization. Therefore, you must assign a strong password for the SYSTEM account. This ensures that a blank or weak SYSTEM user password is not exposed.

Alternatively, you can create another database user account with the same authorization as the SYSTEM user. For more information, see SAP HANA Security Guide.

> **Recommendation**
>
> For security reasons, we recommend that you change the SYSTEM logon password immediately after installing the SAP HANA database server. Alternatively, a safer option is to create another database user account as a substitute for the SYSTEM user.

10.6.1 Password of a Database User

A strong password is the first step to securing your system. A password that can be easily guessed or compromised using a simple dictionary attack makes your system vulnerable. A strong password has the following characteristics:

- Contains alphabetic, numeric, and special characters
- Is at least seven characters in length
- Is NOT a common word or name
- Does NOT contain a name or user name
- Is significantly different from previous passwords

> **Recommendation**
>
> We strongly recommend that you enable the strong password policy in SAP HANA.

To change the password for a database user, in the SAP HANA studio, proceed as follows:

1. Make sure that all sessions using this database user are disconnected.
2. Log on to the SAP HANA studio as a database administrator.
3. In the SAP HANA Systems list, navigate to the corresponding database instance.
4. Choose Security → Users and double-click the database user for which you want to change the password.
   The <instance name> - <Database User> tab appears on the right.
5. Enter and confirm the password.
6. In the upper right toolbar, click (Deploy) to save the new password.

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Note that if you have changed the password for the database user for server connection, you must reconfigure the SAP Business One system.

10.6.2 Creating a Superuser Account

To create a superuser account for maintaining administrative tasks for SAP Business One, version for SAP HANA, in the SAP HANA studio, proceed as follows:

1. Log on to the SAP HANA studio as a database administrator.
2. In the Systems list, navigate to the database instance for which you want to create a superuser account.
3. Choose Security → Users, right-click Users, and choose New User.

   The <instance name> - New User tab appears on the right.
4. On the <instance name> - New User tab, do the following:
   - In the User Name field, enter the name of the new user.
   - Select the Password checkbox, and then specify and confirm the password for the new user.
   - In the Session Client field, do not enter anything.
   - On the System Privileges tab in the lower area, choose . In the Select System Privilege window, add all necessary system privileges.
   - If necessary, in the System Privilege pane on the left, select each privilege, and then in the Details pane on the right, select the checkbox Grantable to other users and roles.
5. In the upper-right toolbar, click (Deploy) to save the new user.

   Note

   When new users first log on to the SAP HANA studio, they must change the password.

10.6.3 Database Privileges for Installing, Upgrading, and Using SAP Business One

To install, upgrade, and use SAP Business One, you must grant the following database privileges to the corresponding SAP HANA database user:

- Roles:
  - **PUBLIC**
  - **CONTENT_ADMIN**
  - **AFLPM_CREATOR_ERASER_EXECUTE** (grantable)
- System privileges:
  - **CREATE SCHEMA** (grantable)
  - **USER ADMIN** (grantable)
  - **ROLE ADMIN** (grantable)
  - **CATALOG READ** (grantable)
  - **IMPORT**

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- **EXPORT**
- **INIFILE ADMIN**
- **LOG ADMIN**

  This is needed if this database user is used to run the migration wizard to migrate your company databases from the Microsoft SQL Server to the SAP HANA server.
- **BACKUP ADMIN**
- **BACKUP OPERATOR**

- SQL object privileges:
  - SYSTEM schema: **CREATE ANY**, **SELECT**
  - _SYS_REPO schema: **SELECT**, **EXECUTE**, **DELETE** (all grantable)

The SBOCOMMON schema is created during the installation of SAP Business One Server, and the COMMON schema is created during the installation of the analytics platform. If you use different SAP HANA users for installing different components, you must pay special attention to grant the following object privileges, as appropriate:

- SBOCOMMON schema: **SELECT**, **INSERT**, **DELETE**, **UPDATE**, **EXECUTE**, **CREATE ANY, DROP** (all grantable)
- COMMON schema: **SELECT**, **INSERT**, **DELETE**, **UPDATE**, **EXECUTE** (all grantable)

Granting Roles and Privileges to Database Users

To grant roles or privileges to a database user, follow the steps below:

1. In the SAP HANA studio, connect to your system as a superuser (for example, SYSTEM).
2. In the Administration Console, under the Security folder of your system, under Users, double-click the database user.

   The details of the database user are displayed on the right.
3. In the right panel, add required roles or privileges.
4. To apply the changes, click  (Deploy) or press F8.

10.6.3.1 Database Role PAL_ROLE for Pervasive Analytics

A database role PAL_ROLE is created during the upgrade/installation process of the app framework. All database privileges necessary for using pervasive analytics are assigned to this role on the condition that you have installed the AFLs properly (for more information, see Host Machine Prerequisites); missing AFLs do not prevent the setup program from creating PAL_ROLE, but you will have to manually assign database privileges after the upgrade/installation (see the troubleshooting section below).

During the upgrade/installation process, or when you change the database user for server connection in the System Landscape Directory, PAL_ROLE is automatically assigned to the database user.

> **Note**
>
> If you change the database user for server connection in the System Landscape Directory, PAL_ROLE is not automatically unassigned from the previously used database user. Similarly, if you change the security option for your company schema (for example, from using a specified database user for each SAP Business One user to using the admin user for all), PAL_ROLE is not automatically unassigned from the database users self-generated for the old option.

You need to release the PAL_ROLE assignments manually.

Troubleshooting Missing Database Privileges for PAL_ROLE

If required database privileges are not granted to PAL_ROLE (for example, because you install the AFLs after you install or upgrade the app framework), or PAL_ROLE is not properly assigned to the relevant database user, or the required database privileges are not granted to non-SYSTEM users, you will have difficulty using pervasive analytics. To solve this issue, follow the troubleshooting instructions below.

> **Note**
>
> If you intend to switch to a database user other than SYSTEM after installing SAP Business One, version for HANA with the SYSTEM user, you should also grant the following object privileges to the non-SYSTEM user before Step 1 and Step 2:
>
> - `SYSTEM.afl_wrapper_generator`: **EXECUTE**
> - `SYSTEM.afl_wrapper_eraser`: **EXECUTE**

Step 1: Ensure PAL_ROLE has all necessary database privileges

1. In the SAP HANA studio, connect to your SAP HANA database instance as the database user that was used to upgrade the app framework.
2. In the Security folder, under Roles, double-click the role PAL_ROLE.

   The details about the role are displayed in the right panel.
3. Check if PAL_ROLE has the following database privileges:
   - Granted roles:
     - AFL__SYS_AFL_AFLPAL_EXECUTE
     - AFL__SYS_AFL_AFLPAL_EXECUTE_WITH_GRANT_OPTION
     - AFLPM_CREATOR_ERASER_EXECUTE
   - Object privileges:
     - `SYSTEM.afl_wrapper_generator`: **EXECUTE**
     - `SYSTEM.afl_wrapper_eraser`: **EXECUTE**
4. If any database privileges are missing, grant the privileges to PAL_ROLE.

Step 2: Ensure PAL_ROLE is assigned to the database user being used for server connection

1. Log on to the System Landscape Directory, edit your server, and check the database user name.

   This database user is being used for server connection.
2. In the SAP HANA studio, connect to your SAP HANA database instance as the database user that was used to upgrade the app framework.
3. In the Security folder, under Users, double-click the name of the database user being used for server connection.

   The details about this database user are displayed in the right panel.
4. If the granted roles do not include PAL_ROLE, then grant `PAL_ROLE (grantable)` to the database user.

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10.6.4 Stored Procedures

You must not rename or remove any of the stored procedures in the SAP HANA database; otherwise, errors could occur when running SAP Business One, version for SAP HANA.

10.6.5 Restricting Database Access

SAP Business One, version for SAP HANA has a mechanism to protect the database from easy changes through direct access.

The advantages of restricting access to the database are:

- Database credentials are not exposed to end users so that end users cannot change the database directly, which protects the databases from being changed or attacked.
- Database credentials are stored in the System Landscape Directory (SLD) schema and end users can access the database only after the application performs a successful site user authentication through the System Landscape Directory.

In SAP Business One, version for SAP HANA, the System Landscape Directory (SLD) is the central repository for credentials information, including the database user ID and password (one for all SAP Business One, version for SAP HANA users).

The database credentials are stored safely in the SLD schema, with additional encryption. The workflow is as follows:

1. Database consumers such as SAP Business One client applications, DI, and services have to provide the SAP Business One, version for SAP HANA credentials (SAP Business One, version for SAP HANA user ID and password) to authenticate against the SLD.
2. Following successful authentication, the SLD supplies its credentials and SAP Business One, version for SAP HANA uses them to connect.

Changing Security Levels

You can apply different security levels of database access through the SLD for each company:

1. To access the SLD service, in a Web browser, navigate to the following URL:

   ```
   https://<Server Address>:<Port>/ControlCenter
   ```

2. In the logon page, enter the site user name and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.

3. On the DB Instance and Companies tab, select the appropriate server.

   The companies that are registered on the server are displayed in the Companies area.

4. In the Companies area, select the company for which you want to define the security level and choose Edit.
5. In the Edit Company window, select one of the following options and choose OK:

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- Use Specified Database User: The system automatically generates a set of database users for the selected company without administrator privileges. SAP Business One accesses the database using one of the database users, depending on the specific database transaction.
- Use Specified Database User for Each Business One User: Most secure and recommended. The system automatically generates a set of database users without administrator privileges for each SAP Business One user. SAP Business One accesses the database using one of the database users, depending on the logged-on SAP Business One user and the specific database transaction.

  Whenever a new SAP Business One user is added, a set of corresponding database users is added.

  You do not have to manually create a read-only database user for queries. For more information, see Queries.

  Note

  The System Landscape Directory automatically creates the relevant database users for each company and system database `SBOCOMMON`.

  - These database users have the read-only or read-write authorizations only for the relevant company databases or the system database.
  - The company database users do not have the authorization for the system database `SBOCOMMON`.

  But if you have selected one of the options in a lower version and upgrade SAP Business One, version for SAP HANA to 10.0, the specific privileges for SBOCOMMON cannot be revoked automatically. For security reasons, we recommend that you delete the database user manually. Thus, the System Landscape Directory will create a new read-only database user.

  Caution

  We do not recommend that you change the names or system privileges of the automatically created database users. However, if you have used some extensibilities (for example, user-defined query, DIAPI and transaction notification) to do queries across the databases in a lower version, you can manually grant additional privileges to the automatically created database users after upgrading SAP Business One to 10.0. Make sure that only necessary privileges are assigned to the database users.

6. You can configure the SLD service to automatically change the password of the automatically created database users on a regular basis, as below:
   1. On the Security Settings tab, select the checkbox Change Database User Password Every <Number> Days.
   2. Enter the number of days between password resets.
   3. Choose Update.

10.7 Application Security

SAP Business One, version for SAP HANA provides features to ensure that unauthorized access to the application does not occur.

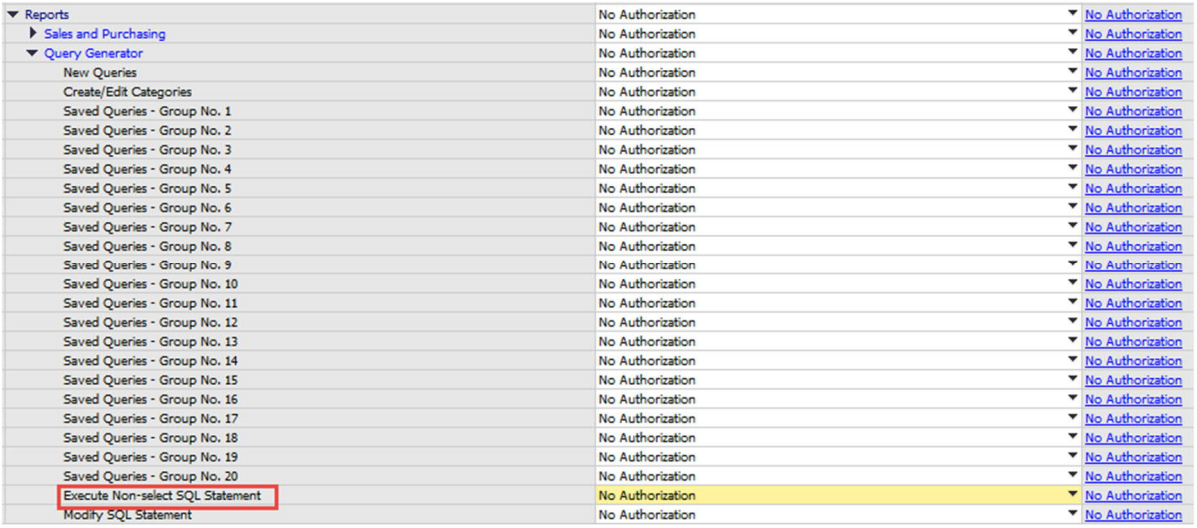
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10.7.1 Queries

The query wizard and query generator enable you to define queries on the database. These tools are designated for SELECT sentences only and cannot be used for any kind of update operation. To protect your data, we recommend that you make sure users have the appropriate permissions. However, the data results returned are not filtered according to the user's authorization.

Granting Read-Only Authorization for Query Results

To enable an SAP Business One user to view the results of both system and user-defined queries, you can directly grant the user full authorization to the `Execute Non-select SQL Statement` authorization item in the General Authorizations window in the SAP Business One client application (Main Menu → System Initialization → Authorizations → General Authorizations).



However, we recommend that you grant read-only authorization to all non-superusers in one of the following ways:

- [Recommended] Do the following:
  1. Configure SAP Business One to access your company using database users without administrator privileges.
  2. Grant No Authorization to all non-superusers in the General Authorizations window.

  This way, users with No Authorization to the `Execute Non-select SQL Statement` authorization item can access the database only through a read-only database user.
- If you configure SAP Business One to access your company using a database administrator user, do the following:
  1. Apply No Authorization to all users to the `Execute Non-select SQL Statement` item.
  2. Create a read-only database user in SAP HANA and define the user password.
  3. Assign the database user to the company in the Read-Only DB User window in the SAP Business One client application. For more information, see the SAP Business One online help.

For more information about configuring the way SAP Business One accesses your company, see Restricting Database Access.

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10.7.2 Add-On Access Protection

When you install an add-on, SAP Business One, version for SAP HANA creates a unique digital signature using the MD5 technique (message-digest algorithm). SAP Business One, version for SAP HANA identifies the add-on by validating its digital signature.

10.7.3 Dashboards

> **Recommendation**
>
> When you receive dashboard content from your partner, before uploading it to the server, we recommend that you copy this content to a computer that has a state-of-the-art virus-scanning solution with the most current virus signature database installed and scan the file for infections.

Dashboards are an element of the cockpit, which is delivered as part of SAP Business One, version for SAP HANA. They present an easy-to-understand visualization, such as a bar or pie chart, of transactional data from SAP Business One, version for SAP HANA. With SAP Business One, version for SAP HANA, SAP delivers predefined dashboards for financials, sales, and service. In addition, SAP Business One, version for SAP HANA partners and customers can create their own dashboards.

For more information about creating dashboards for SAP Business One, version for SAP HANA using SAP Dashboards, look for How to Develop Your Own Dashboards on SAP Help Portal. Customers can find the document in the documentation area of SAP Help Portal.

For creating dashboards using the Dashboard Designer, see the online help documentation.

10.7.4 Browser Access

For security purpose, we recommend that you use different normal operating system users to start backend GUI server applications. For more information, see SAP Note 2876621.

10.7.5 Security Information for the Integration Framework

The subsections below outline the security aspects related to the following solutions:

- DATEV-HR solution
- Mobile solution
- Request for quotation (RFQ)

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10.7.5.1 Security Aspects Related to the DATEV-HR Solution

This scenario requires maximum levels of data security and sensitivity because it exports personal data. The DATEV-HR scenario generates employee data for DATEV eG using SAP Business One data. The integration framework writes the data to a specified directory in the file system. Make sure that only authorized persons have access to the folder.

Ensure that only authorized persons have access to the integration framework administration user interfaces. Alternatively, collect confirmations from all users who have access that they are aware that this data is sensitive, and that they may not distribute any data to third parties or make data accessible to non-authorized persons.

10.7.5.2 Security Aspects Related to the Mobile Solution

After the mobile user enters the correct user name and password, the front-end application passes the mobile phone number and mobile device ID (MAC address), together with the user name and password, to integration framework.

After receiving the information, the integration framework verifies the following:

- Whether the user is enabled as a mobile user
- Whether the necessary license is assigned to the user
- Whether it can find the telephone number and device ID pair in the SAP Business One user administration
- Whether the user name matches the telephone number and the device ID
- Whether the user has been blocked by the SAP Business One system
- Whether the provided password is correct

Then the user is allowed to access the system.

The password is encrypted while it is transmitted to the integration framework, which decrypts the password after receiving it.

10.7.5.2.1 Using HTTPS

To make communication safer, you have the option to use HTTPS for the sessions in the integration framework. On the server side you can configure the communication protocol (HTTP or HTTPS). On the client side, you have the option to switch to the HTTPS protocol. By default, the solution runs with HTTPS, and the integration framework allows incoming calls through HTTPS only.

SAP Business One mobile apps require a valid SSL certificate. For more information about obtaining and installing valid certificates, see SAP Note 2019275.

10.7.5.2.2 License Control

All mobile users have to be licensed before being allowed to access the SAP Business One system through the mobile channel. License administration is integrated with the SAP Business One user and license.

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The mobile user also needs the assignment of the B1i license. Authorization within the SAP Business One application depends on the user's SAP Business One application license.

10.7.5.3 Security Aspects Related to the RFQ Scenario with Online Quotation

> **Note**
>
> The configuration information for the RFQ integration solution is available in the integration framework. To access the documentation, log on to the integration framework, choose Scenarios → Control, and for the `sap.B1RFQ` scenario package, choose Docu.

You must provide vendors included in the RFQ process access to the online purchasing document on the integration framework server.

You can accomplish this by restricting access to the server to a minimum. To restrict access to the server, configure the network (NAT) firewall as shown below:

- Allow external access only to the particular hostname / IP-address.
- Allow external access only to the configured server port.

  Default: port 8080 for HTTP, or port 8443 for HTTPS
- If applicable and available for the particular firewall, configure the restricting URL:
  `http://<hostname>:<portnumber>/B1iXcellerator/exec/ipo/vP.0010000100.in_HCSX/com.sap.b1i.vplatform.runtime/INB_HT_CALL_SYNC_XPT/INB_HT_CALL_SYNC_XPT.ipo/proc?`

10.8 Database Connection Security

SAP Business One, version for SAP HANA supports secure communication between the SAP HANA database and SAP Business One server and client components using Transport Layer Security (TLS) / Secure Sockets Layer (SSL) protocol. During the connection, SAP HANA is the server and SAP Business One components are the clients.

Enabling TLS / SSL for client-server communication provides the following by default:

- Server certificate validation

  The server identifies itself to the client when the connection is established. This reduces the risk of man-in-the-middle attacks and fake servers gaining information from clients.
- Data encryption

  In addition to server authentication, the data being transferred between the client and server is encrypted, which provides integrity and privacy protection. An eavesdropper cannot access or manipulate the data.

Prerequisites

- TLS / SSL have been configured on the SAP HANA server. For more information, see SAP HANA Security Guide at http://help.sap.com/hana_platform.

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- You have generated a correct SSL keystore file from the SAP HANA server. For more information about keystore, see SAP HANA Administration Guide at http://help.sap.com/hana_platform.

10.8.1 System Landscape Directory

To set up the encryption connection between SAP Business One System Landscape Directory (SLD) and SAP HANA database, perform the procedure below.

Procedure

1. Log on to the Linux server as `root`.
2. In a command line terminal, navigate to the directory where the SLD configuration file is located (default path: `/usr/sap/SAPBusinessOne/ServerTools/SLD/conf`).
3. Open the configuration file `sld.xml` using a text editor.
4. In the configuration file, add the following two attributes:
   - **`tlsEnabled="true"`**
   - **`trustStore="/<File Path>/.keystore"`**
   - **`hostNameInCertificate="<hostname>"`**

   for example,
   `url="jdbc:sap://<hostname>:30013?currentSchema=SLDDATA&databaseName=HANA20" tlsEnabled="true" trustStore="/home/.keystore" hostNameInCertificate="<hostname>"`
5. Restart SAP Business One Server Tools.

10.8.2 License Server

To set up the encryption connection between license server and SAP HANA database, perform the procedure below.

Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) and its key file `.key` (for example, `ca.key`) from SAP HANA Server to a temporary location. For more information about generating a root certificate, see SAP HANA Security Guide at http://help.sap.com/hana_platform.
2. To access the SLD service, in a Web browser, navigate to the following URL:
   `https://<Server Address>:<Port>/ControlCenter`
3. In the logon page, enter the site user name and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.

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4. On the Servers and Companies tab, in the Servers area, select the relevant server and choose Edit.
5. In the Edit Server window, select the Connect Using SSL checkbox to enable secure communication between the SLD and SAP HANA database using the SSL protocol. For more information, see Registering Database Instances on the Landscape Server.
6. Log on to the Linux machine of the B1 Server Tools as `root` user and switch to the service user `b1service0`.
7. Navigate to the home directory and create a directory named `.ssl`.
8. Copy the root certificate to the `.ssl` directory and run the following command to generate `turst.pem`:

   ```
   cat ca.crt > trust.pem
   ```
9. Perform the following steps to generate the `key.pem` file.
   1. Use a tool (for example, openssl) to generate a certificate `.pem` (for example, `cert.pem`) and a key `.pem` (for example, `privatekey.pem`) for the license server.
   2. Copy the certificate and the key to the `.ssl` directory.
   3. Run the following command:

      ```
      cat {CertificateName} {KeyName} key.pem
      ```

      (for example, `cat cert.pem privatekey.pem key.pem`)

      The `Key.pem` file contains the license server's certificate and its key file, in which the license server supports secure communication with SAP HANA database using two-way TLS/SSL authentication.
10. Navigate to the directory `/etc/init.d/sapb1servertools` and modify the parameters as follows:

    In TOMCAT_SCRIPT section, add the following environment variable:

    ```
    export TLSEnabled_{TENANTDBNAME}_{ServerName}_{ServerPort}=\"true\"; \
    ```

    (for example, `export TLSEnabled_DBA_<hostname>_30015=\"true\"; \`)
11. Switch back to the `root` user and restart License Server.

10.8.3 Service Layer

To set up the encryption connection between service layer and the SAP HANA database, perform the procedure below.

Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) from SAP HANA Server to a temporary location or more information about generating a root certificate, see SAP HANA Security Guide at: http://help.sap.com/hana_platform
2. To access the SLD service, in a Web browser, navigate to the following URL:

   ```
   https://<Server Address>:<Port>/ControlCenter
   ```
3. In the logon page, enter the site user name and password, and then choose Log On.

   Note

   The site user name is case sensitive.
4. On the Servers and Companies tab, in the Servers area, select the relevant server and choose Edit.

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5. In the Edit Server window, select the Connect Using SSL checkbox to enable secure communication between the SLD and SAP HANA database using the SSL protocol.
6. Log on as the `root` user to the Linux machine on which the SAP Business One Server Tools are installed and switch to the service user `b1service0`.
7. Navigate to the home directory and create a directory named `.ssl`.
8. Copy the root certificate to the `.ssl` directory and run the following command to generate `trust.pem`:

   ```
   cat ca.crt > trust.pem
   ```
9. Perform the following steps to generate the `key.pem` file.
   1. Use a tool (for example, openssl) to generate a certificate `.pem` (for example, `cert.pem`) and a key `.pem` (for example, `privatekey.pem`) for the Service Layer.
   2. Copy the certificate and the key to the `.ssl` directory.
   3. Run the following command:

      ```
      cat {CertificateName} {KeyName} key.pem
      ```

      (for example, `cat cert.pem privatekey.pem key.pem`)
   4. The `Key.pem` file contains the Service Layer's certificate and its key file, in which the Service Layer supports secure communication with SAP HANA database using two-way TLS/SSL authentication.
10. Switch back to the `root` user and restart Service Layer.

10.8.4 SAP Business One Client

To set up the encryption connection between SAP Business One client and the SAP HANA database, perform the procedure below.

Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) from SAP HANA Server and copy it to a temporary location on your client workstation. For more information about generating a root certificate, see SAP HANA Security Guide at http://help.sap.com/hana_platform.
2. Run `mmc.exe` to open Microsoft Management Console on the workstation.
3. Import the `.crt` file in the path: `Console Root\Certificates(Local Computer)\Trusted Root Certification Authorities\Certificates`
4. Run the SAP Business One client and log on to your database server.

10.8.5 Excel Report and Interactive Analysis (Pivot Table Only)

To set up the encryption connection between Excel reports and interactive analysis and an SAP HANA database, perform the procedure below.

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> **Note**
>
> Only the pivot table is supported for this encryption connection.

Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) from SAP HANA Server to a temporary location. For more information about generating a root certificate, see SAP HANA Security Guide at: http://help.sap.com/hana_platform
2. Log on to the Linux server as `root`.
3. In a command line terminal, navigate to the folder `<Installation Path>/SAPBusinessOne/AnalyticsPlatform/TcpReverseProxy` and place the root certificate `ca.crt` in this folder.
4. Navigate to the directory where the reverse proxy configuration file is located (`<Installation Path>/SAPBusinessOne/AnalyticsPlatform/TcpReverseProxy/proxy.cfg`) and modify the parameters as follows:
   - **`enable_ssl=True`**
   - **`ssl_hana_cert=/ca.crt`**

     > **Note**
     >
     > Make sure that the following files exist in the correct relative path based on the path of `TcpReverseProxy (<Installation path>/SAPBusinessOne/AnalyticsPlatform/TcpReverseProxy)`

   - **`relative_tomcat_config=/../../Common/tomcat/conf/server.xml`**
   - **`relative_installer_tool=/../../Common/support/bin/SLDInstallerTool.jar`**
   - **`relative_jre=/../../jre/bin/java`**
   - **`relative_p12=/../../Common/tomcat/cert/https.p12`**
5. Import a trusted root certificated for SAP Business One services to Windows Certificate Manager. For instructions on setting up a local certification authority to issue internal certificates, see Microsoft documentation.
6. On your workstation, navigate to the `%appdata%\SAP\SAP Business One Interactive Analysis` directory.
7. Configure the ExcelReportDesigner.config file as follows:
   - **`<SslEnable>true</SslEnable>`**
   - **`<SslValidate>true</SslValidate>`**
8. Restart SAP Business One Server Tools.

10.8.6 SAP Crystal Reports, version for the SAP Business One Application

To set up the encryption connection between the SAP Crystal Report, version for SAP Business One application and the SAP HANA database, perform the procedure below.

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Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) from SAP HANA Server and copy it `to a temporary location on your client workstation`. For more information about generating a root certificate, see SAP HANA Security Guide at: http://help.sap.com/hana_platform.
2. Run **`mmc.exe`** to open Microsoft Management Console on the workstation.
3. Import the `.crt` file in the path: `Console Root\Certificates(Local Computer)\Trusted Root Certification Authorities\Certificates.`
4. Run SAP Crystal Reports, version for the SAP Business One application.

   > **Note**
   >
   > If you set up an ODBC connection with SSL settings from SAP Crystal Reports for SAP Business One to the SAP HANA server, you should set connection strings as follows:
   >
   > 1. Log on to SAP Crystal Reports for SAP Business One.
   > 2. On the start page, create a new report by clicking (create) .
   > 3. In the Standard Report Creation Wizard window, navigate to Create New Connection →ODBC(RDO).
   > 4. In the ODBC (RDO) window, add **`encrypt=true`** at the end of the existing string.
   >
   > For example,
   > **`"DRIVER=HDBODBC32;SERVERNODE=<hostname>:30013;DATABASENAME=TDB1;DATABASE=SLDDATA;UID=SYSTEM;PWD=*****;encrypt=true"`**

10.8.7 Electronic File Manager: Format Definition (EFM)

SAP Business One provides the Electronic File Manager: Format Definition (EFM) add-on to design various electronic file formats. To set up the encryption connection between EFM and SAP HANA database, perform the procedure below.

Procedure

1. Export a root certificate `.crt` (for example, `ca.crt`) from SAP HANA Server and copy it to a temporary location on your client workstation. For more information about generating root certificate, see SAP HANA Security Guide at http://help.sap.com/hana_platform.
2. Run `mmc.exe` to open Microsoft Management Console on the workstation.
3. Import the `.crt` file in the path: `Console Root\Certificates(Local Computer)\Trusted Root Certification Authorities\Certificates.`
4. Run the EFM.

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10.8.8 Integration Framework

10.8.8.1 Setting Up JDBC Connections with SSL Between Framework and SAP HANA

To set up a JDBC connection with SSL settings from the integration framework to the SAP HANA server, follow the procedure below. SAP HANA is the server and the integration framework is the client. The role of the integration framework is that of a Java application that uses JDBC connections with SSL settings to connect to the SAP HANA server.

Prerequisites

SSL settings are already established on the SAP HANA server using the `commoncrypto` option.

Procedure

1. To obtain the SAP HANA server trust store, log on to SUSE Linux with the `<sid>adm` account.
2. Open the terminal and go to the `$SECUDIR` directory.
3. Enter **`sapgenpse export_own_cert -f x509 -o sapsrv.cer -p sapsrv.pse`**.
4. Copy sapsrv.cer to the integration framework server, for example to `c:\temp\sapsrv.cer`.
5. On the integration framework server, log on to Microsoft Windows with the `administrator` account.
6. Run **`cmd`** as `administrator` and go to the `$JAVA_HOME` directory.
7. To generate a trust store using the SAP HANA server certificate, enter the following:

   ```
   keytool -importcert -keystore C:\temp\sapsrv.keystore -alias HANServer -file
   c:\temp\sapsrv.cer
   ```

8. Enter the password to the trust store and enter **`yes`** to add the certificate to the trust store.

   The sapsrv.keystore file is the trust store with the `HANServer` alias and the password that you entered. It is the trust store for the JDBC connection with SSL settings.

10.8.8.2 Enabling a Secure Connection Between Framework and SAP HANA

To secure the JDBC connection between the integration framework and the SAP HANA database that the integration framework uses, perform the steps below.

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Procedure

1. On the server where the integration framework database is installed, log on to Windows with the `administrator` account.
2. Go to `<Your B1i installation folder>\Tomcat\webapps\B1iXcellerator\` and open the xcellerator.cfg file for editing.
3. Change the value of the `bpc.jdbc_url` property in the following way:

   ```
   bpc.jdbc_url=jdbc:sap://<server>:<port>?databaseName\=<Container Name>&currentschema\=IFSERV&autocommit\=false&encrypt\=true&validateCertificate\=true&trustStore\=<The file path of the trust store file provided by the SAP HANA server>
   ```

   If `IFSERV` is not the database name of the integration framework, change the name in the URL.
4. To restart the SAP Business One integration service, open the Services window, select SAP Business One Integration Service, click Stop and then click Start.

10.8.8.3 Enabling Secure Connections Between Framework and Company Databases

Procedure

1. In the integration framework, choose SLD and in the navigation, open the entry for an SAP Business One company database and click Edit Entry.
2. Scroll down to the JDBC section and edit the url parameter value as follows:

   ```
   jdbc:sap://<server>:<port>?databaseName=<Container Name>&currentschema=<Company Database Name>&autocommit=false&encrypt=true&validateCertificate=true&trustStore=<The file path of the trust store file provided by the SAP HANA server>
   ```
3. Save and test the connection.

10.8.9 Other Components

Perform the procedure below if you intend to set up a secure connection between SAP HANA database and one of the following components:

- Job Service
- Analytics Platform
- Live Collaboration
- Web Client
- Office 365 Integration

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Procedure

1. To access the SLD service, in a Web browser, navigate to the following URL:
   `https://<Server Address>:<Port>/ControlCenter`
2. In the logon page, enter the site user name and password, and then choose Log On.

   > **Note**
   >
   > The site user name is case sensitive.
3. On the Servers and Companies tab, in the Servers area, select the relevant server and choose Edit.
4. In the Edit Server window, select the Connect Using SSL checkbox to enable secure communication between the SLD and the SAP HANA database using the SSL protocol.
5. Restart the component.

10.9 Data Protection and Privacy

Data protection is associated with numerous legal requirements and privacy concerns. In addition to compliance with general data protection acts, it is necessary to consider compliance with industry-specific legislation in different countries. This section describes the specific features and functions that SAP provides to support compliance with the relevant legal requirements and data privacy.

This section does not give any advice on whether these features and functions are the best method to support company, industry, regional or country-specific requirements. Furthermore, this guide does not give any advice or recommendations with regard to additional features that would be required in a particular environment; decisions related to data protection must be made on a case-by-case basis and under consideration of the given system landscape and the applicable legal requirements.

> **Note**
>
> In the majority of cases, compliance with data privacy laws is not a product feature.
>
> SAP software supports data protection by providing security features and specific data-protection-relevant functions such as functions for the simplified blocking and deletion of personal data.
>
> SAP does not provide legal advice in any form.

SAP Business One provides the related functions to ensure that all users' rights are protected and that customers are enabled to achieve data protection and privacy compliance. The following topics are related to data protection:

Access control: Authentication features as described in section User Administration and Authentication.

Authorizations control: As described in How to Manage the Protection of Personal Data in SAP Business One on SAP Help Portal.

Communication security: As described in section Network and Communication Security.

Data storage security: We recommend that you use the high availability solution for SAP HANA database. For more information, see Setting Up SAP HANA High Availability for SAP Business One on SLES for SAP Applications and Setting Up SAP HANA High Availability for SAP Business One on SUSE Linux Enterprise Server on SAP Help Portal.

For more information about SAP Business One data protection and privacy, see How to Manage the Protection of Personal Data in SAP Business One on SAP Help Portal.

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10.10 Security-Relevant Logging and Tracing

SAP Business One, version for SAP HANA keeps the security-relevant logs for recording and analyzing security-related events for the backend services.

Service Layer

- Path to the log folder: `<server tool install folder>/ServiceLayer/logs/`
- Format of the file name: `Securityevent.YYYYMMDD.b1s.log`
- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

Services in Server Tools

- Path to the log folder:
  - On Linux: `/var/log/SAPBusinessOne/Security/`
  - On Windows: `%ProgramData%\sap\SAP Business One\Log\Security\`
- Format of the file name: `securityevent_saml2.log`
- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

Browser Access

- Path to the log folder: `%ProgramData%\sap\SAP Business One\Log\Security\`
- Format of the file name: `securityevent_saml2.log`
- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

System Landscape Directory (SLD)

- Path to the log folder: `/var/log/SAPBusinessOne/ServerTools/SLD/`
- Format of the file name: `Securityevent_%d{yyyy-MM-dd}_sld.log`
- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

Job Service

- Path to the log folder: `/var/log/SAPBusinessOne/ServerTools/Mailer/`
- Format of the file name: `Securityevent_%d{yyyy-MM-dd}_jobService.log`

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- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

Mobile Service

- Path to the log folder: `$ProgramData$\sap\SAP Business One\Log\Security\`
- Format of the file name: `Securityevent_sam12.log`
- Format of the recorded event in the log: `<Date Time> <User ID> <Source IP> <Event Type> <Event Description>`

10.11 Other Security Recommendations

You can check the following information to identify if you securely operate the SAP Business One application.

Demo Database

The demo databases (schemas) provided are not for productive use. Do not use the demo databases (schemas) in a productive environment.

If you install the demo databases (schemas), log on with the `manager` account and change the default password immediately for each demo database (schema).

Post-Uninstallation Activities

Immediately after uninstalling SAP Business One, you are required to manually delete the SAP Business One folders on Linux and Windows to avoid leaking any data.

Operating System

- Keep the boundaries between client components. Restrict end user access to the operating system on servers.
- Protecting the high privileged accounts of operating system is top priority.

Configurating Services Running as Low-Privileged Operating System Users on Windows Servers

- License Service

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We recommend that you run the SAP Business One license service as a low-privileged operating system user. You can configure TAO NT Naming Service to log on as local service users or network service users, then restart the license service.

- Data Interface Server

  We recommend that you run the Data Interface Server (DI Server) as a low-privileged operating system user. You can perform the following steps:

  1. Configure the Windows service DI server to log on with local service users or network service users.
  2. Give permissions to the directory where the DI Server logs are located (Log path is defined in `<server tools install folder>\DI_Server\Config.xml`. The default log path is the current directory.)
  3. Restart the Windows service DI Server.

- Workflow

  We recommend that you run the SAP Business One workflow service as a low-privileged operating system user. You can perform the following steps to run the workflow service as local service users or network service users:

  1. Grant permissions to network service users or local service users to create the services that listen on 61179 port.

     For example, **`netsh http add urlacl url=https://+:61179/ user="\NETWORK SERVICE"`**

     Or **`netsh http add urlacl url=https://+:61179/ user="\LOCAL SERVICE"`**
  2. Grant permissions to network service users or local service users to access the temp folder under `<Server Tools Path>\Workflow\TomcatConfig.`
  3. Configure the windows services SBOWFDataAccess and B1Workflow to run as local service users or network service users.
  4. Restart the windows services SBOWFDataAccess and B1Workflow.

Log Configuration

For troubleshooting purposes, sometimes you need to turn on the detailed log or debugging log in the configuration. Ensure that you change back the settings once the troubleshooting is completed and delete the debugging logs.

Turning off the Default UI API Connection String

In a productive environment, we strongly recommend that you turn off the default UI API connection string on presentation servers (the terminal servers installed the SAP Business One client). For more information, see SAP Note 2755830.

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Service Layer

Service Layer provides basic authentication. However, for security reasons, we recommend that you do not use the basic authentication.

Shared Folder

We recommend that you provide anti-virus protection for the shared folder either at server level or at company level.

Upgrading SAP JVM

The SAP JVM 8 used in SAP Business One is located in `<Installation Folder>/SAPBusinessOne/Common/sapjvm_8` and `<Installation Folder>\SAP Business One BAS GateKeeper\sapjvm_8 for BA`. If you need to upgrade SAP JVM 8 to the latest patch, you can download it from the SAP Website and replace the folders with the new patch.

10.12 Deployment

SAP Business One, version for 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.

10.12.1 Initialization of SAP Business One Analytics Powered by SAP HANA

To initialize company schemas 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.

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11 Troubleshooting

If SAP Business One, version for 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.

Restarting SAP Business One Services on Linux

If one of the following services fails, you may need to restart the server tools:

- SLD service
- License service
- SBO Mailer service
- Analytics Platform service (SAP Business One analytics powered by SAP HANA)

> **Note**
>
> For release 8.82 as well as release 9.0 PL10 and lower, you can stop and start the analytics platform service using the following commands:
>
> - Stop: **`/etc/init.d/b1ad stop`**
> - Start: **`/etc/init.d/b1ad start`**

To restart the server tools, log on to the Linux server as `root` or the `<sid>adm` user (for example, `ndbadm`) and then run the following command:

`/etc/init.d/sapb1servertools restart`

In addition, to stop or start the server tools, run the following commands respectively:

- **`/etc/init.d/sapb1servertools stop`**
- **`/etc/init.d/sapb1servertools start`**

Starting Samba to Access and Upgrade the Shared folder

To access the shared folder `b1_shf` on your Linux server, you must start the Samba component. Similarly, you must start Samba when upgrading the shared folder; otherwise, the shared folder is not listed as a candidate for upgrade in the setup wizard.

> **Recommendation**
>
> Add Samba to the startup program list for your Linux server. This way, Samba is automatically launched when the server is rebooted.

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Fixing Errors about Corrupt Installation or Registry Files

When upgrading or uninstalling the server tools, the SAP Business One server, or SAP Business One analytics powered by SAP HANA, you may encounter errors that inform you of corrupt installation or registry files. The possible causes are:

You have changed the installation or registry files improperly.

You have deleted the installation or registry files without running the proper uninstallation process.

To solve the issue, do the following:

1. Reinstall the SAP HANA instance that is used for installation.
2. Delete the entire directory where the corrupt installation files reside.
3. Clean up the InstallShield registry file `/var/.com.zerog.registry.xml`. To do so, remove all `product` elements that contain one of the following:
    - `id="e7fcf679-1f07-11b2-8b14-bdc7bfb1d41f"`
    - `id="2d5396f9-1f0f-11b2-984f-f5753618c50c"`
4. Start the installation again.

Changing Xming Mode to Install Components on Linux

If you use Xming to provide a graphical interface on Windows when installing components on Linux, you may encounter difficulty entering information into the wizard (for example, specifying the System Landscape Directory server name). A possible solution to this problem is not to set Xming in the multiwindow mode, which is usually the default option.

You can change the mode of Xming by using commands or the Xlaunch wizard. For more information, see http://www.straightrunning.com/XmingNotes/.

Troubleshooting Service Layer Connection Problems

If you cannot connect to the Service Layer, there may be problems with the load balancer or a balancer member. To identify the cause and fix the problem, do the following:

1. To access the balancer manager, in a Web browser, enter the following URL:

    `https://<Balancer Server Address>:<Port>/balancer-manager`
2. If you cannot access the balancer manager, log on to the load balancer machine as `root` and restart the load balancer using the following command:

    `/etc/init.d/b1s<Load Balancer Port> restart`
3. In the balancer manager, check the status of each load balancer member. If a member is running abnormally, log on to the load balancer member machine as `root` and restart the member using the following command:

    `/etc/init.d/b1s<Load Balancer Member Port> restart`
4. If you can access the balancer manager and the status of all load balancer members is OK, but you still cannot connect to the Service Layer, check the error log files on each machine on which Service Layer components are installed. The error log files are located under `<Installation Directory>/logs/ServiceLayer` with access log files and SSL request log files as below:
    - `access_<Load Balancer/Member Port>_log_<Date>`: Records the requests sent or distributed to the load balancer or the load balancer member.

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- `error_<Load Balancer/Member Port>_log_<Date>`: Records the errors which the Apache server encounters.
- `ssl_<Load Balancer Port>_log_<Date>`: Records the SSL requests sent to the load balancer and is relevant only to the load balancer.

  Note

  The log format is defined by the corresponding Apache configuration file (`httpd-b1s-lb.conf` for the load balancer and `httpd-b1s-lb-member-<Port Number>.conf` for load balancer members), which is located under `<Load Balancer/Member Installation Folder>/ServiceLayer/conf`. For more information, see the documentation about the mod_log_config module at http://httpd.apache.org/docs.

  We recommend that users do not modify Apache configuration files. However, if you need to modify the configuration files, be aware of the following points:

  - After changing an Apache configuration file, you must restart the respective Service Layer component in order for the changes to take effect.
  - After you upgrade the Service Layer to a higher version, all changes made by you will be lost. On the contrary, changes made by tools like the Service Layer configurator will be kept. For more information, see Service Layer in the post-installation chapter.

If you want to restart all local Service Layer components (load balancer and load balancer members), use the following command:

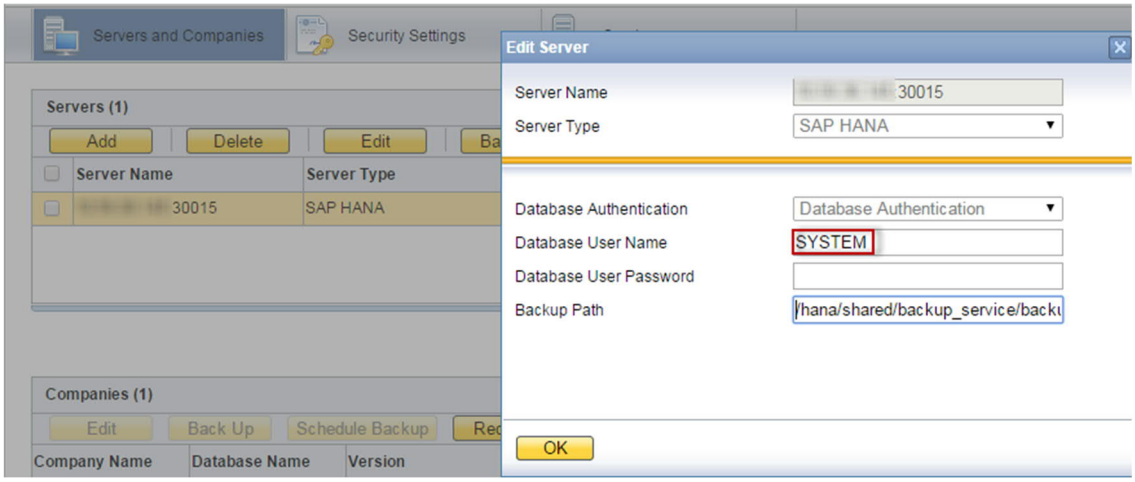
```
/etc/init.d/b1s restart
```

The `start` and `stop` commands are also valid for the Service Layer. For example, `/etc/init.d/b1s stop` stops all local Service Layer components.

Imported Company Schema Is Not Displayed in the Company List

Prerequisites:

- You currently use database user A for database connection. To verify this, in the System Landscape Directory, on the Servers and Companies tab, edit your server and review the Database User Name field.



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- Both database users in question (A and B) have all the necessary privileges, as described in Database Privileges for Installing, Upgrading and Using SAP Business One.

Scenario:

1. In the SAP Business One client, create a new company TESTDB (schema name).
2. In the SAP HANA studio, do the following:
    1. Connect to your server as either database user A or B, and then export the company schema TESTDB.
    2. Connect to your server as database user B and import the company schema TESTDB.
3. Open the SAP Business One client or log on to the System Landscape Directory.

Problem:

The imported company schema is not displayed in the company list.

Cause:

Database user A does not have access to or modification privileges on the imported company schema.

Solution:

1. In the SAP HANA studio, connect to your server instance as database user B.
2. Grant to database user A full object privileges on the imported company schema.

Cannot Use Excel Report and Interactive Analysis

Prerequisite:

You have installed Excel Report and Interactive Analysis to a folder that is not in the `%ProgramFiles%` directory.

Problem:

After installing Excel Report and Interactive Analysis, you cannot use it: the add-in cannot be loaded in Microsoft Excel.

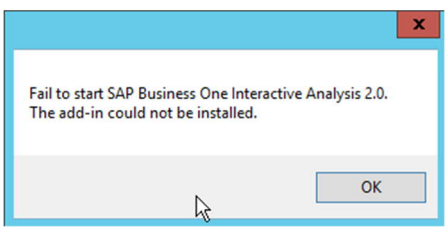
Cause:

The Excel Report and Interactive Analysis add-in was only partly installed.

Solution:

1. Make the Excel Report and Interactive Analysis add-in available in Microsoft Excel
    1. In the Windows menu, choose SAP Business One Excel Report and Interactive Analysis .
    2. An error message is displayed and informs of a failed installation.

       Ignore the error message by clicking OK.



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2. In Microsoft Excel, activate the Excel Report and Interactive Analysis COM add-in.

   For instructions on how to manage add-ins, see the Microsoft online help.

3. In the Windows menu, choose SAP Business One Excel Report and Interactive Analysis again.

   This time the installation is successful.

You can now launch Excel Report and Interactive Analysis from within the SAP Business One client or from the Windows menu.

Fixing Java Heap Issues

When initializing large-sized company schemas in the Administration Console for SAP Business One analytics powered by SAP HANA, 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 Excel Report and Interactive Analysis

Problems may arise when you use Excel Report and 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 Excel Report and 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 Next.
3. On the Provider tab of the Data Link Properties window, select SAP HANA MDX Provider, and choose Next.
4. On the Advanced tab, select Enable ODBO provider tracing. Specify a location to store the log file and choose OK.

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

Setting Connection Configuration & Timeout Variables for SAP Business One analytics powered by SAP HANA

SAP Business One analytics powered by SAP HANA 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 `<Installation Directory>/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

Variable	Description	Default Value
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, to wait for the license server connections.	6 (seconds)

Changing Logging Levels in the Tomcat Server

If SAP Business One analytics powered by SAP HANA does not work as expected, as the system administrator, you 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 `/usr/sap/SAPBusinessOne/AnalyticsPlatform/tomcat/logs`.

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

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

   > **Note**
   >
   > By default, the configuration file is located under `/usr/sap/SAPBusinessOne/AnalyticsPlatform/conf`.

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 troubleshooting section “Restarting SAP Business One Services on Linux”.

Diagnosing SAP Business One Client Connectivity Issues (or Ensuring Correct Network Settings for SAP Business One Clients)

If it takes a much longer time than usual (for example, 4 minutes) for your SAP Business One client to connect to SAP HANA, you may need to check your network settings, including but not limited to:

- TCP/IP properties
- Firewall settings
- Mapping of the hostname to the IP address
- DNS
- Default gateway
- Network card
- Ipv4 versus Ipv6 (for example, are you using Ipv4 while your network actually supports Ipv6?)

In addition, you can use the PING command to determine the IP address of your client or server machine, and help identify network problems.

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Blocking Security Alerts

If you are using Microsoft Windows Internet Explorer, and have not installed an appropriate security certificate, a security alert may appear in the following scenarios:

- Using enterprise search
- Designing pervasive dashboards
- Using cash flow forecast
- Checking ATP
- Scheduling deliveries



To install a security certificate, proceed as follows:

1. In the Web browser, navigate to the following URL:

   `https://<Server IP Address>:<SLD Port>/IMCC`
2. Click the Continue to this website (not recommended) link.
3. In the toolbar, choose Safety → Security Report.

   The Certificate Invalid window appears.
4. In the Certificate Invalid window, click the View certificates link.

   The Certificate window appears.
5. On the General tab of the Certificate window, choose Install Certificate....

   The Certificate Import Wizard welcome window appears.
6. In the welcome window, choose Next, and in the Certificate Store window, select the Place all certificates in the following store radio button.
7. In the Certificate Store window, choose Browse. In the Select Certificate Store window, select the certificate store Trusted Root Certification Authorities, and choose OK.
8. In the Certificate Store window, choose Next, and in the Certificate Import Wizard complete window, choose Finish.

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9. In the Security Warning window, choose Yes.

   A message appears indicating that the security certificate was imported successfully.

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12 Getting Support

We recommend that you assign a contact person who can deal with issues concerning SAP Business One, version for SAP HANA. This contact person should follow the support process described below.

> **Note**
>
> Before you request support, check the version information of your SAP Business One application, version for SAP HANA.
>
> To view the version number, from the SAP Business One Help menu, choose About.

As a customer, you can get support from your partner either by creating an incident on the Support Launchpad for SAP Business One or by using the support channels provided by your partner.

The partner support staff tries to solve your problem. If they are unsuccessful, they forward the incident that you have created on the Support Launchpad for SAP Business One to the SAP Support team, or create an incident for you if you used an alternative support channel.

12.1 Using Online Help and SAP Notes

If you have a question or problem concerning SAP Business One, version for SAP HANA, check the online help by pressing F1. Note that the Help menu in the application provides more help options.

If online help does not provide an answer, search for corresponding SAP Notes, as follows:

1. Log on to the Support Launchpad for SAP Business One by any of the following options:
   - Go to the Website directly using https://apps.support.sap.com/B1support/index.html.
   - In the SAP Business One, version for SAP HANA menu bar, choose Help → Support Desk → Support Launchpad and Note Search.

     > **Note**
     >
     > To gain access to the Support Launchpad for SAP Business One, you must be an SAP Business One customer or partner, and you need an S-user account. If you do not have an S-user account, contact your SAP Business One partner.
2. On the What are you looking for? area, choose SAP Notes Search.

   You can either display a note directly by providing the number of the note, or you can search for a note by entering key words. Think about the keywords to use, and choose the application area.

   The application area for SAP Business One starts with “SBO”.

   > **Example**
   >
   > Problem Message: “The performance of the SAP Business One, version for SAP HANA program is not acceptable. Executing all operations takes a long time. The problem occurs only on one front-end.”
   >
   > Use: Keywords **`Performance`** and **`SAP Business One`**. Specify the component **`SBO-BC*`**.
   >
   > Do not use: Phrases such as **`SAP Business One runs long`** or **`SAP Business One is too slow`**.

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Appendix

Appendix 1: List of Prerequisite Libraries for Server Component Installation

The following table lists the prerequisite third-party libraries and their version requirements:

Third-Party Library	Version Requirements	Remarks
bash	Any version	None
bind-utils	Any version	None
coreutils	Any version	None
cron	Any version	Necessary for the backup service
curl	Any version	None
cyrus-sasl	≥ 2.1.26-3.23	None
dos2unix	Any version	Necessary for Service Layer
gawk	Any version	None
glibc	≥ 2.26-13.8.1	None
glibc-i18ndata	≥ 2.26	None
glibc-locale	≥ 2.26	None
krb5	≥ 1.15.2	None
libaio1	≥ 0.3.109-0.1.46	None
Libcap-progs	Any version	Necessary for Web Client
libcom_err2	≥ 1.43.8-4.3.1	None
libcurl4	≥ 7.60.0	Necessary for Service Layer
libexpat1	≥ 2.2.5	None
libgcc_s1	≥ 7.3.1	None
Libgcrypt20	≥ 1.8.2	None
libgpg-error0	≥ 1.29-1.8	None
libldap-2_4-2	≥ 2.4.46-9.3.1	None
liblua5_3-5	≥ 5.3.4	Necessary for Service Layer
Libopenssl1_1	≥ 1.1.0i	None

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Third-Party Library	Version Requirements	Remarks
`keyutils-libs`	≥ 1.2-107.22	None
`Libicu60_2`	Any version	Necessary for the Electronic Document Service
`libidn11`	≥ 1.34-1.9	Note that for SUSE 15, `libidn11` is provided by the `libidn-tools` package so you must install `libidn-tools`.
`libssh2-1`	Any version	None
`libstdc++6`	≥ 7.3.1	None
`libxml2`	Any version	None
`net-tools`	Any version	None
`nfs-kernel-server`	Any version	Necessary for the backup service
`nfs-client`	Any version	Necessary for any SAP HANA server that requires to be backed up using the backup service
`openssl`	≥ 1.1.0i	Necessary for Service Layer
`pam`	≥ 1.3.0-6.6.1	None
`perl`	Any version	None
`python`	≥ 2.7.14, < 3.0.0	None
`python-gtk`	Any version	Necessary for the GUI installation Note that for SLES 15 SP1, you must install `Python 2 Module` to get `python-gtk`.
`python-openssl`	Any version	Necessary for the SLD Note that for SLES 15 SP1, you must install `Python 2 Module` to get `python-openssl`.
`rpm(/usr/bin/rpmbuild)`	Any version	None
`rpm-build (/usr/bin/rpmbuild)`	Any version	None
`samba`	Any version	Necessary for the shared folder `b1_shf`

Third-Party Library	Version Requirements	Remarks
`samba-client`	Any version	Necessary for the shared folder `b1_shf`
`timezone`	Any version	None
`unzip`	Any version	Necessary for the backup service
`zip`	Any version	Necessary for the backup service and the common database `SBOCOMMON`
`zlib`	≥ 1.2.3	None

To check whether any of the prerequisite libraries are installed, and whether they are of the correct version, do the following:

1. Insert the SUSE Linux Enterprise Server 15 installation DVD into the DVD drive on your server.
2. Start YaST.
3. In the software management module of YaST, search for the corresponding library.
4. If the checkbox for the library is not selected, select the checkbox and choose Accept to install the library.
5. If required, update the library to the latest version.

For more information, see Installing Modules, Extensions, and Third Party Add-On Products on https://www.suse.com/documentation/ or contact your IT administrator.

Recommendation

To avoid some share folder access issues, we recommend that you disable AppArmor by performing one of the following commands:

```
systemctl stop apparmor.service
systemctl disable apparmor.service
```

For more information about AppArmor, see Introducing AppArmor and Confining Privileges with AppArmor.

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Appendix 2: List of Integrated Third-Party Products

SAP Business One, version for SAP HANA integrates with various third-party products, some of which are licensed by SAP; others are not.

The third-party software products listed in the table below are fully or partly integrated with SAP Business One, version for SAP HANA but are not licensed by SAP:

Third-Party Product	Supplier
SEE4C v7.1	MarshallSoft Computing, Inc.
Victor Image Processing Library v6.0	Catenary Systems Inc.
Visual Parse++ 5.0 XPF (Cross-platform edition)	Sandstone Technology Inc.
ComponentOne VSFlexGrid 7.0 Pro (UNICODE)	ComponentOne
DynaPDF 3.0	DynaForms GmbH
InstallShield 2011/2015 (ISSetup.dll)	Flexera Software LLC
InstallAnywhere 2011 Enterprise	Flexera Software LLC

The following third-party products are owned by SAP and are fully or partly integrated with SAP Business One, version for SAP HANA. These products may also include third-party software.

- Chart Engine 620 Release
- SAP Crystal Reports 2011 for SAP Business One (Runtime)
- SAP Crystal Reports 2013 for SAP Business One (Runtime)
- SAP Crystal Reports 2011 for SAP Business One (Designer)
- SAP Crystal Reports 2013 for SAP Business One (Designer)
- SAP Crystal Reports 2016 for SAP Business One (Designer)
- SAP License Key library 720
- SBOP Business Intelligence Platform 4.0 .NET SDK Runtime FP3
- SAP JVM 8.1
- SAP HANA Platform Edition 2.0
- SAML2 library (JAVA)
- SAP HANA EclipseLink Platform plugin
- SAPGENPSE
- SAP Cryptographic Library (libsapcrypto.so)

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Appendix 3: List of Localization Abbreviations

Abbreviation	Localization
AR	Argentina
AT	Austria
AU	Australia
BE	Belgium
BR	Brazil
CA	Canada
CH	Switzerland
CL	Chile
CN	China
CR	Costa Rica
CZ	Czech Republic
CY	Cyprus
DE	Germany
DK	Denmark
ES	Spain
FI	Finland
FR	France
GB	Great Britain
GR	Greece
GT	Guatemala
HU	Hungary
IL	Israel
IN	India
IT	Italy
JP	Japan
KR	Korea
MX	Mexico
NL	Netherlands
NO	Norway

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Abbreviation	Localization
PA	Panama
PL	Poland
PT	Portugal
RU	Russia
SE	Sweden
SG	Singapore
SK	Slovakia
TR	Turkey
US	United States
ZA	South Africa

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Appendix 4: List of Return Codes Used in the Server Components Setup Wizard

When you run the server components setup wizard on the Linux server, sometimes you encounter return codes which usually indicate some kind of occurred errors.

The following table lists the return codes used in the server components setup wizard on the Linux server.

Error Code	Error	Remarks
0	No error	
21	Argument error	Command line contains some unknown, unsupported or incorrect commands.
22	Property file or template file error	Wizard is unable to read or access configuration files, which may be caused by wrong file locations, wrong file accesses or wrong contents in files.
23	Silent mode error	The error occurs in silent mode, for example, missing property file.
24	Generic validation error	Validation is a natural part of the installation and upgrade process. The error occurs during the validation process.
25	Generic action error	The error occurs in a component script, for example, `SLD_postinstall.sh`.
30	No feature was selected.	When you start the wizard, no valid component is selected, or all selected components have already been installed with the actual versions.

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Appendix 5: List of Default Ports for Different Server Components

The following table lists the default ports used for different server components. Ensure that you have kept the following ports available.

Default Ports	Server Components	Remarks
3xx15 (default value for the first tenant database); 3xx40 to 3xx99 (for all tenant databases); 3xx13 (for the system database)	SAP HANA services	xx represents the SAP HANA instance number.
43xx or 80xx	App framework	xx represents the SAP HANA instance number.
40000	Components in shared Tomcat, including: • System Landscape Directory • License Service • Analytics Platform • Backup Service • Job Service • Mobile Service • Extension Manager	This port should be exposed to the Internet if you need to use some SAP Business One components (for example, the Browser Access service) on the Internet.
50000 (for load balancer); 50001, 50002, 50003... (for load balancer members)	Service Layer	The service layer is for internal component calls only and you do not need to expose it to the Internet.
60000	Workflow	
39915	Interactive analysis on the SAP HANA server	
443	Reverse proxy	
8080 (for HTTP) 8443 (for HTTPS)	Integration Framework	
8100	Browser Access	If you need to access SAP Business One services via the Internet, you need to expose this port to the Internet.
443	Web Client	
7299	Electronic Document Service	
60010	Authentication Service	

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Default Ports	Server Components	Remarks
60000	API Gateway Service	

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Appendix 6: List of Log File Locations for SAP Business One Components

The following tables list the paths to Installation and runtime log files for SAP Business One components and services.

Table 1: Log Files on Linux Servers

Component	Installation Log Path	Runtime Log Path
Server Tools		
System Landscape Directory (SLD)	/var/log/SAPBusinessOne	• /var/log/SAPBusinessOne/ServerTools/SLD/sldService.log • /var/log/SAPBusinessOne/ServerTools/SLD/sldService-access.log, • /var/log/SAPBusinessOne/ServerTools/SLD/security.log, • /var/log/SAPBusinessOne/ServerTools/SLD/sldService-performance.log • /usr/sap/SAPBusiessOne/Common/tomcat/logs/catalina.out
Extension Manager	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/ServerTools/SLD
License Service	var/log/SAPBusinessOne/B1Installer_YYYYMMDDHHMM.log	/var/log/SAPBusinessOne/ServerTools/License/B1Log.txt
Job Service	/var/log/SAPBusinessOne	/var/log/SAPBusinessOne/ServerTools/Mailer
Mobile Service	/var/log/SAPBusinessOne	/var/log/SAPBusinessOne/ServerTools/B1MobileServer
App Framework	/var/log/SAPBusinessOne	xsengine trace files under "Diagnosis Files" within SAP HANA Studio.
Backup Service	/var/log/SAPBusinessOne	• /var/log/SAPBusinessOne/ServerTools/BackupService/backupService.log • /var/log/SAPBusinessOne/BackupService Note: Multiple files are created starting with the schema name.
Service Layer	/var/log/SAPBusinessOne	/usr/sap/SAPBusinessOne/ServiceLayer/logs
Web Client		• /usr/sap/SAPBusinessOne/WebClient/anly.txt • /usr/sap/SAPBusinessOne/WebClient/tcli.txt • /usr/sap/SAPBusinessOne/WebClient/auth.txt • /usr/sap/SAPBusinessOne/WebClient/gate.txt

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Component	Installation Log Path	Runtime Log Path
Electronic Document Service (EDS)		/var/log/SAPBusinessOne/EDS
SLD Agent	/var/log/SAPBusinessOne	/var/log/SAPBusinessOne/SLDAgent/sldAgent.log
Analytics Features		
SAP HANA Models	/var/log/SAPBusinessOne	• /var/log/SAPBusinessOne/AnalyticsPlatform/analyticService.log • /usr/sap/SAPBusiessOne/Common/tomcat/logs/catalina.out
Enterprise Search Service	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/AnalyticsPlatform
Real-Time Dashboard Service	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/AnalyticsPlatform
Data Staging Service	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/AnalyticsPlatform
Administration Console	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/AnalyticsPlatform
Predictive Analysis Service	/var/log/SAPBusinessOne	var/log/SAPBusinessOne/AnalyticsPlatform
Analytical Portal Log		/usr/sap/SAPBusinessOne/Common/tomcat/logs

Tabel 2: Log Files on Windows Machines

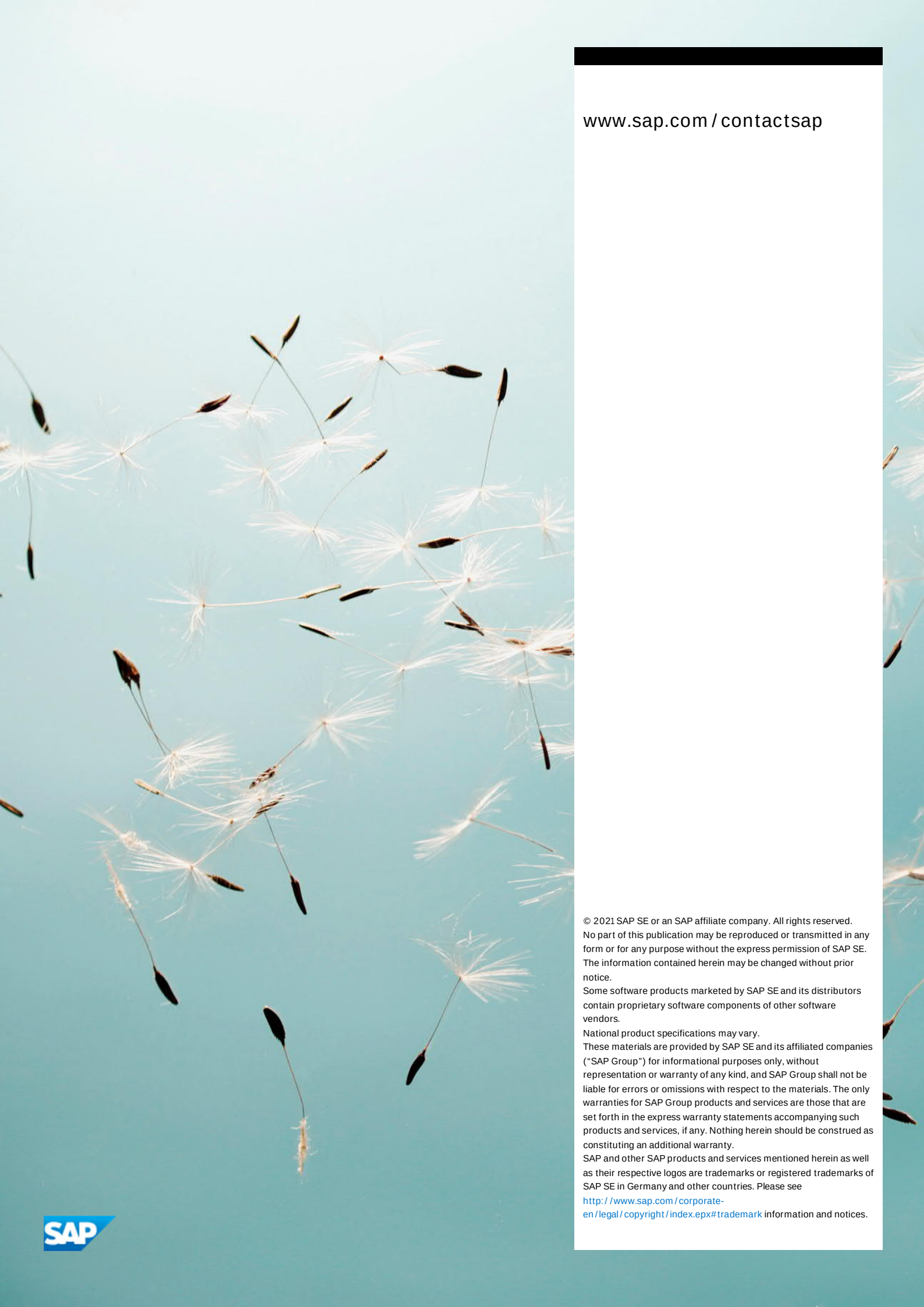
Component	Installation Log Path	Runtime Log Path
Server Components		
Outlook Integration Server	C:\Windows\Add-On Server Installer (32*-bit).log	
Remote Support Platform (RSP)	C:\ProgramData\SAP\SAP Business One\Log\Remote Support Platform\Installer\RSP.Install.YYYYMMDD_XXXXXX.log	%programdata%\SAP\SAP Business One\Log\Remote Support Platform\Service\RSP.AgentService.YYYYMMDD_XXXXXX.log

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Component	Installation Log Path	Runtime Log Path
Browser Access Service (BAS)	C:\Windows\SAP Business One Browser Access Server Gatekeeper.log	%Program Files(X86)%\SAP\SAP Business One BAS GateKeeper\tomcat\logs
Add-ons Filename format: Addon_XX_YY (XX-Addon designation, YY-Severity Level (01-Error, 02-Warning, 03-Information))		
DATEV	C:\Windows\Add-on_Datev.log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\Addon\
Datev2LW		• %LOCALAPPDATA%\SAP\SAP Business One\Log\Addon\B1Framework • %programfiles%\sap\SAP Business One\AddOns\SAP\Datev2LW\X64Client • %programfiles(x86)%\sap\SAP Business One\AddOns\SAP\Datev2LW\X86Client
EFM Format Definition	C:\Windows\Add-on_FormatDefinition.log	%LOCALAPPDATA%\SAP\SAP Business One\Log\Addon\Addon_EFMRD_XX
Fixed Assets	C:\Windows\Add-on_FixedAssets.log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\Addon\
Outlook Integration Solution	C:\Windows\Add-on_OutlookIntegration.log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\Addon\
Payment Engine	C:\Windows\Add on_Payment.log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\Addon\
Elster	C:\Windows\Add-on_Elster.log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\Addon\
Client Components		
SAP Business One Client	C:\Windows\SAP Business One Client (32*-bit).log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\BusinessOne\
Data Interface API (DI API)	C:\Windows\SAP Business One DI API (32*-bit).log	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\BusinessOne\
User Interface API (UI API)		Use the Windows event logger
Software Development Kit	C:\Windows\ SAP Business One Software Development Kit.log	
Data Transfer Workbench (DTW)	C:\Windows\Add-On Data Transfer Workbench for SAP Business One (32*-bit).log	C:\ProgramData\SAP\SAP Business One\Log\Data Transfer Workbench\<User>\

Component	Installation Log Path	Runtime Log Path
SAP Business One Studio	• C:\Windows\SAP Business One Studio (32* bit).log • C:\Windows\SAP Business One Studio (64-bit).log	%userprofile%\SAP\Business One Studio
Integration Solution		
Outlook Integration Solution	C:\Windows\Add-On OI Standalone (32-bit).log	• OI addin: %ProgramData%\SAP\SAP Business One\Log\Outlook Integration Log • SAP Business One OI: %ProgramData%\SAP\SAP Business One\Log\SAP Business One\<User>\Addon\
Integration Framework (Components)	C:\Program Files (x86)\SAP\SAP Business One Integration_SAP Business One Integration_installation\Logs	Troubleshooting is mostly performed using the integration framework UI (Message Log, and so on); only exceptionally done using the following log files: • %programfiles(x86)%\sap\SAP Business One Integration\Tomcat\logs (plain Tomcat logs) • %programfiles(x86)%\sap\SAP Business One Integration\Tomcat\temp (integration framework low-level logs) Other: DI Proxies and Event Sender also have their own logs
Others		
Migration Wizard	C:\ProgramData\SAP\SAP Business One\Log\SAP Business One\<Windows user>\MigrationWizard\CurrentLogs\	%programdata%\sap\SAP Business One\Log\SAP Business One\<User>\MigrationWizard\
SAP Business One Client Agent	C:\Windows\SAP Business One Client Agent.log	%programdata%\sap\SAP Business One\Log\SAP Business One Client Agent
Prerequisites	C:\Windows\SAP Business One Prereq.log	

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