Extension Certification for SAP Business One OnDemand

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`.

Document History

Version	Date	Change
1.0	2013-03-01	First version.

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1 Introduction

This guide provides information about the technical requirements for certifying extensions to work with SAP Business One OnDemand. The certification process ensures that add-ons run reliably and securely in the cloud.

> **ⓘ Note**
>
> This guide covers only the technical requirements for certifying extensions to work with SAP Business One OnDemand.
>
> For information about the technical implementation and management of SAP Business One in an on-demand landscape, see *SAP Business One OnDemand Administrator's Guide*.

1.1 Overview

Extensions for SAP Business One OnDemand are additional components that meet specific industry or niche business requirements. SAP Business One OnDemand provides support for the lifecycle management of the following types of third-party extensions:

- Extensible fields and objects

  Includes user-defined tables, fields, and objects, formatted searches, and user queries.

- SAP Business One Script

  A lightweight, JavaScript-based extension system that you can use to quickly adapt SAP Business One to business-specific processes in on-demand environments.

  Unlike traditional SAP Business One add-ons, these extensions are "sandboxed", with managed access to system functionality. SAP Business One Script enables you to quickly and cheaply develop solutions that address last-mile extensibility, without the need for certification. In addition, users can modify scripts on-the-fly according to immediate business requirements.

  For more information, see *Working with SAP Business One Script*.

- Add-ons enabled for lightweight deployment

  Add-ons for which the lifecycle management is fully automated in on-demand environments, without the need for any manual installations or configuration on the server. These add-ons have access to the full functionality of SAP Business One. You can completely configure add-ons enabled for lightweight deployment using the Cloud Control Center. Depending on requirements, the types of add-ons enabled for lightweight deployment are as follows:

  o Fully compliant add-on certified by SAP

    Typically developed by software solution providers (SSPs) to address broad industry needs. These add-ons are certified by SAP to ensure that they run reliably and securely in on-demand environments, and are marketed and sold to a wide audience.

  o Fully compliant add-on not certified by SAP

    Typically developed by value-added resellers (VARs) to meet the specific business requirements of a few individual customers. Although these add-ons still meet the requirements for lightweight deployment, they do not receive certification by SAP since they are not marketed and sold to a wide audience.

- Compatible add-ons

  Add-ons for which the lifecycle management is not fully automated in on-demand environments, with the need for manual installations or configuration on the server. These add-ons have access to the full functionality of SAP Business One. You can partially configure these add-ons using the Cloud Control Center.

1.2 Glossary

Term	Description
Cloud Control Center	An interface for the SLD service that Cloud Operators can use to manage an SAP Business One OnDemand landscape. You can register infrastructure components, add users, and create service units and tenants.
Cloud Operator	An authorized Cloud Control Center user responsible for managing an SAP Business One OnDemand landscape. Cloud Operators can belong only to a single customer, but can be reassigned to other customers.
Common Database	A central database containing system data, update packages, and add-ons. Multiple tenants in the same service unit share a single common database.
Company Database	A database that stores all business and transaction data. A single customer may require several company databases.
Company Template Repository	A global folder that stores database backup files, which you can use to create tenants.
Customer	A client organization that has purchased a subscription to remotely access SAP Business One for a pre-defined period of time and specific number of named users, according to contractual conditions.
Extension	An additional component for SAP Business One, developed by SAP or a third-party, to meet specific industry or niche business requirements.
Implementation Repository	A global folder that stores SAP Business One solution package (.PAK) files, which you can use to create tenants.
Power User	Power users can access the following windows in SAP Business One that are not available to regular users: • License windows • Add-on windows • Query windows
Presentation Server	A server that provides tenants with remote access to the SAP Business One client application.
Presentation Server Farm	A collection of presentation servers that provide remote access to the SAP Business One client application for a single service unit.
Reseller	A company that sells SAP software and provides first-level support to their customers. Resellers market, sell, and implement customized SAP Business One OnDemand solutions and provide ongoing support, consulting, and education services to

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Term	Description
	customers.
Reseller Operator	An authorized Cloud Control Center user, employed by a reseller, responsible for managing an SAP Business One landscape on behalf of their customers. Reseller Operators can have multiple assigned customers.
Resource	A service unit, customer, or license file assigned to a reseller.
SAP Business One User	A licensed SAP Business One user, who is a member of a customer that has purchased a subscription to remotely access SAP Business One OnDemand. An SAP Business One User can belong only to a single customer, and cannot be reassigned to other customers.
Service Unit	A collection of the software components, servers, and storage required to provide access to a full SAP Business One installation. All SAP Business One components in a single service unit have the same version. A single service unit can contain multiple tenants with similar requirements.
Shared Folder	A folder assigned to a service unit that contains sub-folders dedicated to individual tenants, in which attachments, images, and document templates required to use SAP Business One are stored.
SLD Agent Service	An agent service that executes tasks on behalf of the SLD, such as performing database upgrades.
SLD Client	A client that can communicate with the system landscape directory using the SAP Business One OnDemand API.
Software Repository	A shared folder accessible by all service units, containing SAP Business One installation packages, upgrade packages, and add-on installers.
Storage	A collective term for software repositories, shared folders, implementation repositories, and company template repositories.
Superuser	An SAP Business One User with additional permissions. In SAP Business One, superusers can do the following: • Access all windows and perform all functions • Limit the authorizations of users that are not superusers ⚠ Caution In an on-demand environment, you can assign superuser permissions only to Cloud Operators.
System Landscape Directory (SLD)	A central directory of all SAP Business One components in an on-demand landscape. A service provides information about software components and their settings, how resources are grouped into service units, and registered customers, tenants, and users.
Tenant	A company database, storage, and licenses allocated to a customer to provide business functionality. A customer may have multiple tenants across different service units, with each tenant having a different application version or purpose, such as productive, demonstration, or testing instances.

Term	Description
User Access Portal	A web site where users can enter their logon credentials to remotely access the SAP Business One application.

2 Supporting Multiple Tenants

This section provides information about supporting multiple tenants. In SAP Business One OnDemand, a tenant represents a company database, storage, and licenses allocated to a customer to provide business functionality. Customers may have multiple tenants across different service units, with each tenant having a different application version or purpose, such as productive, demonstration, or testing instances. To maximize efficiency, multiple tenants can share hardware resources and software components, with data and settings stored in separate, secure company databases and allocated storage.

An SAP Business One User starts a new session when they log on to the SAP Business One client. The client runs on a presentation server, together with any assigned extensions. An extension runs as a separate process for each session. To ensure an extension can support multiple tenants:

- There must not be any conflict between the extension processes of different sessions during runtime.

- The extension cannot exclusively occupy a resource, such as a presentation server or database instance.

- The extension process cannot conceal tenant-specific data that it generates from other processes belonging to that extension, including sensitive information such as business data and user credentials.

2.1 Resource Usage

An extension cannot exclusively occupy a resource, as this would block other extension processes from accessing required resources. In particular, you must pay attention to the following:

- Database Instances – An extension process cannot exclusively occupy the database instance of the service unit to which it is deployed. For example, an extension process cannot lock a table which is required by another process of the same extension.

- Presentation Servers – An extension process cannot exclusively occupy a resource of the presentation server on which it is running, such as ports, files, and so on.

- Other Resources – An extension process cannot exclusively occupy other resources that may be required by other extension processes, such as servers or external web services.

2.2 Tenant-Specific Data

At runtime, an extension process cannot conceal any tenant-specific data from other processes belonging to that extension, including sensitive information such as business data and user credentials, or exchange data with other processes that do not belong to the same extension.

Extensions must not store sensitive data in databases or on presentation servers where other extensions would otherwise be able to access such data.

3 Storing Data

Customers' data is stored in secure company databases and several files in dedicated directories, with access permissions granted on a per-user or per-tenant basis. Individual customers cannot see or access the data of other customers.

Extensions can store data in the following locations:

* Company databases and user-defined tables (UDTs)
* Dedicated add-on folders in the tenant storage using the `GetExtensionSharedFolderPath` or `GetExtensionSharedFolderPathEx` functions of UI API
* User storage using the `GetUserStorage` function of UI API
* SAP Business One Users' roaming profile folders (not recommended)
* Web services using HTTP/HTTPS

In on-demand environments, the Cloud Control Center manages all locations where extensions can store and retrieve data to enforce data security best practices and minimize operational costs. Depending on how extensions store data, there are different requirements for the various types of extension certification.

3.1 Databases

A database instance runs Microsoft SQL Server and includes all company databases and common databases for a single service unit:

* Company Database – A database that stores all business and transaction data. A single customer may require several company databases.
* Common Database – A central database containing system data, update packages, and add-ons. Multiple tenants in the same service unit share a single common database.

3.1.1 Using Separate Databases

To facilitate the persistence of additional data that an extension may require, in addition to business and transaction data stored in the company database, an extension may typically store data in separate databases.

However, to minimize maintenance requirements and operational costs, certified extensions may **not** store data in additional databases in on-demand environments. Certified extensions may store data only in company databases, for which the SLD handles the lifecycle management.

> **i** Note
>
> For legacy reasons, some extensions may still require separate databases in which to store data. In this scenario, an extension can be certified as a compatible add-on, but cannot be granted the status of a fully-complaint add-on certified by SAP for lightweight deployment.

3.1.2   Creating Fields and Tables

In addition to fine granularity of storage, an extension cannot create any fields or tables in an SAP Business One company database, except for user-defined fields (UDF) and tables (UDT).

3.1.3   Accessing Company Databases

Extensions can use DI API to access data stored in SAP Business One company databases. Direct SQL access is prohibited.

To access company databases in an on-demand environment using DI API, an extension must first establish a DI connection using either of the following methods:

- **DI connection using domain credentials**

  Example

```
SAPbobsCOM.Company newComp = new SAPbobsCOM.Company();
        newComp.CompanyDB = "CXUK_base"; //database name not company name
        newComp.UserName = "SAP_ALL\\i075885";//domain user that can log on to SLD
        newComp.Password = "xxxxxxxxxxxx";
        long ret = newComp.Connect();// success if ret==0
```

- **DI connection from UI connection**

  Example

```
private SAPbouiCOM.Application SBO_Application;
        private SAPbobsCOM.Company oCompany;
SAPbouiCOM.SboGuiApi SboGuiApi = new SAPbouiCOM.SboGuiApi();
        SboGuiApi.Connect(sConnectionString);
        SBO_Application = SboGuiApi.GetApplication(-1);
oCompany = (SAPbobsCOM.Company)SBO_Application.Company.GetDICompany();
//oCompany now is connected if no exceptions occur
```

- **DI connection from UI connection (variant)**

  Example

```
private SAPbouiCOM.Application SBO_Application;
SAPbouiCOM.SboGuiApi SboGuiApi = new SAPbouiCOM.SboGuiApi();
        SboGuiApi.Connect(sConnectionString);
        SBO_Application = SboGuiApi.GetApplication(-1);
        SAPbobsCOM.Company newComp = new SAPbobsCOM.Company();
        newComp.Application = SBO_Application;
        long ret = newComp.Connect(); // success if ret==0
```

For more information about working with DI API, see the *Online Help* for the SAP Business One Software Development Kit (SDK).

3.2   Storage

An SAP Business One OnDemand landscape includes the following shared folders in which extensions can store files:

- Tenant Storage – A folder assigned to a service unit that contains sub-folders dedicated to individual tenants, in which logs and company database backup files, used during tenant upgrades, are stored. Each tenant sub-folder also contains folders for each assigned extension. You can use this folder to store files required by or generated by the extension that are relevant to all the users of a tenant.
- User Storage – A global folder that contains sub-folders dedicated to individual users, in which user-sensitive data and documents are stored. You can use this folder to store files required by or generated by the extension that are relevant to only a single user.

3.2.1   Storing Tenant-Specific Data

To access the tenant storage, in which you can store tenant-specific data, use the following API request to get the path of the shared folder for an individual extension:

```
string GetExtensionSharedFolderPathEx (string connectionString);
```

Parameters:

- `connectionString` – The connection string that the SAP Business One client passes to the extension.

Responses:

- A string containing the tenant shared folder of the tenant to which the extension is assigned.
- The connection string that UI API is using for the current connection.
- An exception with error code `-8020` if the SAP Business One application is not running in an on-demand environment.

3.2.2   Storing User-Specific Data

To access the user storage, in which you can store user-specific data, use the following API request to get the path of the shared folder:

```
string GetUserStorage()
```

Responses:

- A string containing the user storage path.

- An exception with error code −8020 if the SAP Business One application is not running in an on-demand environment.
- An exception with error code −8021 if the user storage is not configured in the Cloud Control Center.

4 Enabling Add-Ons for Lightweight Deployment

This section describes the points you must consider to certify an extension for lightweight deployment.

The lifecycle management of add-ons enabled for lightweight deployment is fully automated in on-demand environments, without the need for any manual installations or configuration on the server. Add-ons that are enabled for lightweight deployment do not have dedicated installers. Instead, the required files are located within a single folder or ZIP archive, and installation is performed by the application.

4.1 Package Structure

Add-ons enabled for lightweight deployment must contain the following components in a folder or ZIP archive, without any InstallShield or MSI wrapper to facilitate automatic management by the Cloud Control Center:

Component	Description
Executable files	You can have more than one executable file, but you can specify only one as the add-on executable file in the ARD file.
Add-on registration data (ARD) file	Only one ARD file that generated by AddOnRegDataGenLW.exe under {SAP Business One Install Folder}\SAP Business One SDK\Tools\AddOnRegDataGen
COM-based DLLs	Must be referenced in the ARD file.
Others	Other required sub-folders, configuration files, and binaries.

Add-on registration data (ARD) files contain the following add-on registration data in Extensible Markup Language (XML) format:

- Basic Information – Specifies the name and contact information of the SAP partner that creates the add-on, and the name, version, and basic properties of the add-on.
- SBO Compatibility – Specifies the versions of SAP Business One with which the add-on is compatible.
- Configuration – Specifies landscape, deployment, and assignment values for the add-on, and information required for installation and uninstallation.

You can generate ARD files using the Extension Registration Data Generator tool, located at ...\SAP\SAP Business One SDK\Tools\AddOnRegDataGen\AddOnRegDataGenLW.exe.

For more information, see *Generating Add-On Registration Data for Lightweight Deployment*.

4.2 Version Compatibility

To manage the automatic deployment of add-ons enabled for lightweight deployment, you can specify SAP Business One compatibility information in an extension's ARD file using a six digit string to represent the supported version number.

⚠ Caution

If you do not specify any compatibility data, users can register the add-on in all versions of SAP Business One.

4.3 Supporting Multiple Versions

When enabling add-ons for lightweight deployment, you can specify support for multiple versions of an add-on in an extension's ARD file. In this case, you can deploy multiple different versions of the same add-on to a single presentation server. There must not be any interaction between different versions of the same add-on running on the same presentation server, or any COM or third-party library conflicts.

i Note

We recommend that your extension support multiple versions of SAP Business One. If your extension does not support multiple versions, you must ensure that users can upgrade the extension from lower to higher versions.

4.4 DI API and UI API Usage in On-Demand Environments

This section provides information about DI API and UI API usage in on-demand environments, which differs to the usage in a typical on-premise installation.

The SAP Business One Software Development Kit allows you to easily interface your extension with SAP Business One. SAP Business One consists of a graphical user interface and a separate business object layer. The SDK provides full access to both the user interface (UI) layer and the business object layer (DI).

4.4.1 DI API Usage

Unlike in a typical on-premise environment, you are required to provide domain credentials with the following DI API request in on-demand environments:

`Company.GetCompanyList`

🟧 Example

```
SAPbobsCOM.Company company = new SAPbobsCOM.CompanyClass();
company.UserName = @"[DomainName]\[UserName]"; // Domain user name of the user
    who is logging on, both domain name and user name are required
```

```
company.Password = "[Password]";
SAPbobsCOM.Recordset companyList = c.GetCompanyList();
```

The following DI API request includes the license type `TRIAL` in on-demand environments, and returns `true` when the specified user is licensed or the trial period is still valid:

```
CompanyService.IsUserLicensed(string bstrUserName, string bstrLicType)
```

Example

```
SAPbobsCOM.Company oCompany = new SAPbobsCOM.Company();
        SAPbobsCOM.CompanyService oCompanyService = oCompany.GetCompanyService();
        bool isUserLicensed = oCompanyService.IsUserLicensed("b1user", "TRIAL");
```

4.4.2   UI API Usage

The following table lists UI API requests that are relevant to only on-demand environments.

Object	Method/Property	Remarks
`SAPbouiCOM.Application`	`boolean IsHostedEnvironment`	• Read-only property. • Returns `true` if the SAP Business One client is running in an on-demand environment.
`SAPbouiCOM.IApplication.Company`	`string GetExtensionSharedFolderPath(string extensionName, string extensionVersion)`	**Parameters:** • `extensionName` – The name of the extension (string). • `extensionVersion` – The version of the extension (string). **Responses:** • A string containing the tenant storage of the tenant to which the specified extension is assigned. • An exception with error code `-8020` if the SAP Business One application is not running in an on-demand environment. • An empty string if the specified extension is not found according to the provided name and version. **Example responses:** • `\\CNPVGVB1OD097\temp\DE_Payment\Extension\SAP\FixedAssets\882.074.11` • `\\CNPVGVB1OD097\temp\` – The tenant storage. In the Cloud Control Center, you can configure this in *Infrastructure Management → Storage → Tenant Storage*.

Object	Method/Property	Remarks
		• `DE_Payment` – The name of the tenant (company name) to which UI API is connecting. • `FixedAssets\882.074.11` – The name and version of the specified extension.
	`string GetExtensionSharedFolderPathEx (string connectionString);`	**Parameters:** • `connectionString` – The connection string that the SAP Business One client passes to the extension (string). **Responses:** • A string containing the tenant storage of the tenant to which the specified extension is assigned. The value is the same as that returned by `GetExtensionSharedFolderPath`, but the pass in value is the connection string that UI API is using for the current connection. • An exception with error code `–8020` if the SAP Business One application is not running in an on-demand environment. • An empty string if the connection string is not generated by the SAP Business One client. • An empty string if passing the constant connection string that is used in an on-premise installation.

	`string GetExtensionProperty (string connectionString, BoExtensionLCMStageType lcmType, string propName)`	**Parameters:**
		• `connectionString` – The connection string that the SAP Business One client passes to the extension (string).
		• `lcmType` – BoExtensionLCMStageType enums that contains the following values:
		  ○ `lcm_extension` – The property deployed during the repository stage. In the Cloud Control Center, you can configure this in *Landscape Management → Extensions → Properties*.
		  ○ `lcm_assignment` – The property deployed during the assignment stage. In the Cloud Control Center, you can configure this in *Customer Management → Tenants → Extensions*.
		  ○ `lcm_deployment` – The property deployed during the deployment stage. In the Cloud Control Center, you can configure this in *Landscape Management → Service Units → Extensions*.

Object	Method/Property	Remarks
		• `propName` – The name of the property (string). **Responses:** • A string containing the property value. • An exception with error code `-8020` if the SAP Business One application is not running in an on-demand environment. • An empty string if the property is not found. • An empty string if the connection string is not generated by the SAP Business One client. • An empty string if passing the constant connection string that is used in an on-premise installation.
	`string GetUserStorage()`	**Responses:** • A string containing the user storage path. • An exception with error code `-8020` if the SAP Business One application is not running in an on-demand environment. • An exception with error code `-8021` if the user storage is not configured in the Cloud Control Center. **Example responses:** • `\\PVGD50814572A\temp\i075885` • `\\PVGD50814572A\temp\` – The user storage. In the Cloud Control Center, you can configure this in *Landscape Management → Storage → User Storage.* • `i075885` – The user currently logged on to the SAP Business One application.

4.5   Third-Party Libraries

Fully-compliant add-ons enabled for lightweight deployment are prohibited from using third-party libraries, except for fundamental landscape components, such as the presentation server, Internet Explorer, Adobe Reader, and so on.

If your extension requires the use of third-party libraries, then the extension can be certified as only a compatible add-on and you must provide the following information in the extension documentation:

• Name, vendor, license, and version of the third-party library

• Third-party library APIs that your extension uses

• Any conflicts between different versions of the extension

4.6 Server Components

Server components are any components on which your extension depends that operate in a server capacity or provide services. To maximize performance and decrease operational costs in an on-demand environment, you must deploy server components on a dedicated server and not on the database or presentation servers.

Server components are prohibited from acting as a license server or providing licensing services to extensions.

> ℹ **Note**
>
> If your extension requires a server component to be installed on the database server or presentation server, then the extension can be certified as only a compatible add-on and you must provide detailed installation instructions in the extension documentation.

5 Integrating with Other Systems

Extensions may exchange data with other systems. For example, an extension may connect to an external bank exchange system to retrieve currency exchange rates.

If your extension interacts with other systems outside the SAP Business One OnDemand environment, you must include the following information in the extension documentation:

- Transactions or scenarios between the extension and other systems
- Network communication protocols and corresponding port numbers, for example "https/443"
- Whether multiple tenants are supported in transactions/scenarios

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