



# Software Solution Test Guidelines for Microsoft Dynamics Business Central on-premises

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## PROGRAM OVERVIEW

Welcome to the Software Solution Test Guidelines for Microsoft Dynamics Business Central on-premises. This document describes the requirements that an independent software vendor (ISV) solution must meet to interoperate with Microsoft Dynamics Business Central on-premises.

Optionally, you can choose to replace the software solution test with an online test. For more information, send an email message to [dyncert@microsoft.com](mailto:dyncert@microsoft.com).

The goals of the test are to increase the quality of solutions that run in the Business Central on-premises environment and to assure the market that ISV solutions that are built on Business Central on-premises meet technical requirements that ensure a high standard.

The test guidelines are designed to walk you through the test process and to help you ensure that your solution can meet the requirements. The test guidelines are described in individual, subject-based modules and provide detailed information about the summary and intent, additional resources, compliance, test methodology, and criteria for passing. Some guidelines may be common to other Microsoft Dynamics tests.

To pass the test, you must demonstrate the development quality of your solution and your ability as a software company to maintain and enhance that solution in the future. The test is administered and conducted by a third-party vendor and includes a technical review and an in-lab inspection.

This document contains the following sections:

- This Introduction section explains the purpose and high-level requirements of the test.
- The [Testing Process](#) section describes how the testing process works from qualification through communication of test results.
- The [Documentation Requirements](#) section provides a list of the documentation that you must submit with your solution.
- The [ISV Software Solution Requirements and Recommendations](#) section defines each requirement and recommendation category, how these requirements and recommendations are tested, and what you can do to ensure that your solution meets the requirements.

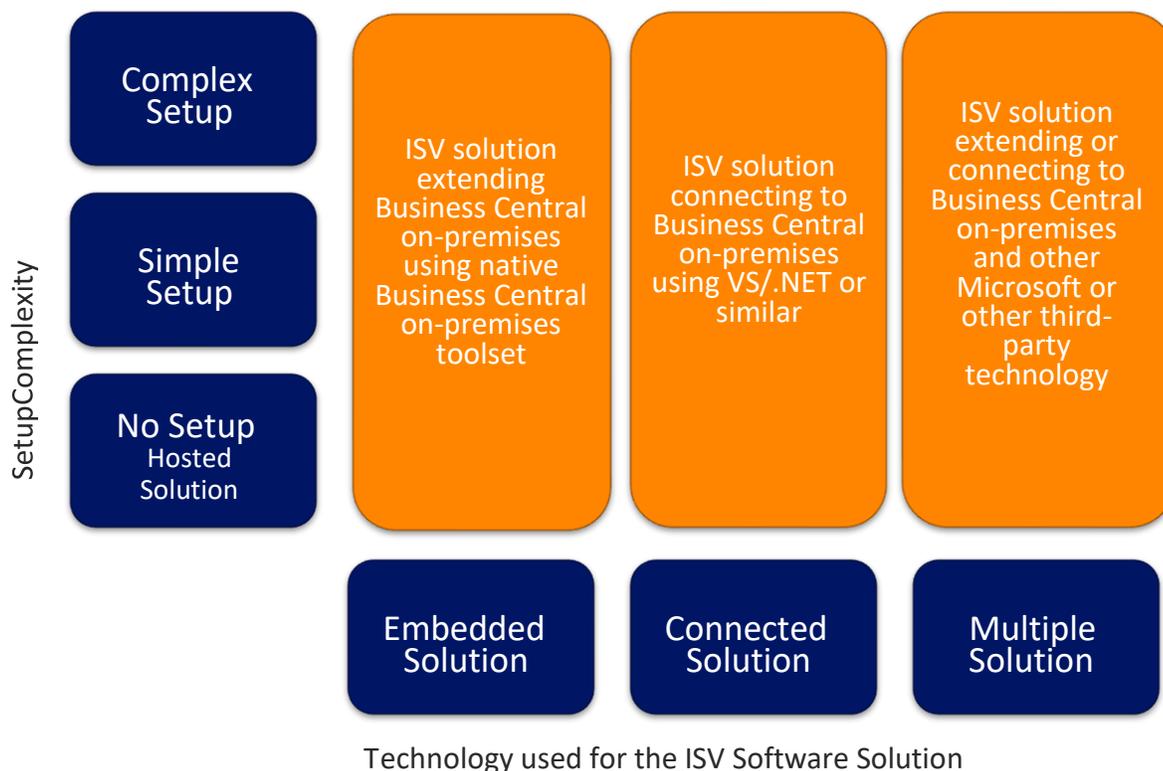
We welcome your comments and suggestions. Send an email message to [dyncert@microsoft.com](mailto:dyncert@microsoft.com) with your feedback.

## SUPPORTED PRODUCT VERSIONS

ISV solutions that are submitted for testing must run on Microsoft Dynamics Business Central on-premises with the latest cumulative update applied.

## TYPES OF SOLUTIONS

Microsoft Dynamics solutions fall into three general categories and three setup complexity levels. The category and setup complexity of a solution determines the type and complexity of the testing requirements and the costs that are associated with testing the solution. Figure 1 shows the different solution categories and setup complexity levels.



**Figure 1** Solution categories and setup complexity levels

In terms of technology, ISV solution complexity falls into one of the following categories, which are listed from least complex to most complex:

- An *embedded* or in-product solution is an ISV solution that extends Business Central on-premises by using only the tools that are provided with Business Central on-premises. For example, an embedded solution can be built in C/SIDE, which is a proprietary development environment for Business Central on-premises. These solutions are built with a RoleTailored experience.
- A *connected* solution is an ISV solution that uses Microsoft Visual Studio, the Microsoft .NET Framework, or similar tools to connect to Business Central on-premises.

A connected solution typically refers to a stand-alone product that interoperates with Business Central on-premises by using it as a business rules engine. The solution can establish interoperability with web services or .NET Framework assemblies. The solution does not need to be based on the .NET Framework. However, it must run on a supported version of a Microsoft operating system.

- A *multiple* solution is one that connects to or extends Business Central on-premises and other Microsoft or third-party technologies.

Setup complexity falls into one of the following categories, which are listed from least complex to most complex:

- A *No* setup, which can be a hosted solution, provides services to end users who do not have to purchase, set up, or maintain the software or hardware. Installing and configuring a hosted solution can be complex, and the test vendor may not have the hardware, custom software, or services that the solution requires.
- A *simple* setup is one that the test vendor can install and configure without requiring a restorable backup, virtual hard disks (VHD), or other additional assistance.
- A *complex* setup is one that the test vendor cannot completely replicate, such as a solution that require specific hardware, custom software, or back-end services that the vendor cannot duplicate.

## TEST VALIDITY

For more information about the Certified for Microsoft Dynamics test process, see the [Certified for Microsoft Dynamics \(CfMD\)](#) page on PartnerSource.

## MORE INFORMATION

For more information about the functionality of Business Central on-premises, see the Business Central on-premises page on [Microsoft.com](#) or on our [Docs](#) site.

For more information about the Microsoft Partner Program, see the [Microsoft Partner Network](#) page.

For more information about the Microsoft Dynamics ERP competency, see the [Enterprise Resource Planning Competency](#) page.

## TESTING PROCESS

Microsoft offers solution testing through two different third-party testing vendors – Lionbridge (Software Solution Test) and 1ClickFactory (Online Self-Test).

### Software Solution Test

One option is to register for a Software Solution Test with Lionbridge at the following location:

<http://microsites.lionbridge.com/veritestcertification/SitePages/dynamics-step-by-step-instructions.aspx>.

Depending on the type and setup of your solution, different test methods will apply, and the test fee will vary. You can make your solution available to the test vendor for testing by using one of the following methods:

- Providing the solution with installation instructions,
- Sending a Hyper-V® virtual hard disk (VHD) image of a working configuration of the solution,
- Providing a link to a virtual machine (VM) with a working configuration of the solution,
- Using an interactive online conferencing session to provide access to a working configuration of the solution.

After you register your solution and pay the test fee, the test vendor will contact you with information about the testing process that you have selected. For processes that involve shipping software or VHD images to the test vendor, you can choose to send the solution on DVD, upload your solution to an FTP server, or have the test vendor download your solution from your server. If you choose to use online conferencing to provide access to your solution, then the test vendor will contact you to schedule the session.

You must meet the following requirements:

- You must be prequalified, and you are responsible for making certain that your solution and organization meets the requirements for submitting and maintaining a Business Central on-premises based solution.
- You must submit documentation, which is identified in the appropriate test modules and in the summary checklist, as part of the test. For more information, see [Documentation Requirements](#).
- You must upload your solution and all supporting documents to the test vendor's servers for testing. If your setup is complex, then you must be prepared to use Office online conferencing to demonstrate the solution and solution deployment to the test vendor.

### Online Self-Test

Alternatively, you can sign up for the CfMD Self-Test at the following location:

<https://www.1clickfactory.com/cfmd/nav/1clickfactory-cfmd-self-test-for-dynamics-nav/>. When you have registered, you will receive an e-mail with the instructions on how to complete the software self-test.

The 1ClickFactory CfMD Self-Test for Business Central on-premises is outstanding with its affordable pricing, rapid testing speed, free retest (5 test attempts within three months) and 24/7 data access.

To start using the online 1ClickFactory CfMD Self-Test for NAV, simply:

- (1) Register on the 1ClickFactory online portal - [register here](#).
- (2) Request the 1ClickFactory CfMD Self-Test for NAV Service - [click here](#).
- (3) Receive the e-mail from 1ClickFactory with the detailed instructions on how to complete the software self-test.

When providing your solution related information online to request the service, please be prepared to select one of the following options for how you provide your solution to 1ClickFactory:

- Option 1: Deploy your solution free of charge on Microsoft Azure using the 1ClickFactory Self-Provisioning platform.
- Option 2: Create your own testing environment and provide 1ClickFactory with the remote access.

## DOCUMENTATION REQUIREMENTS

The checklists in this section describe the documentation that you must include when you submit your solution. Because a single document can contain information that meets multiple requirements, you may have fewer documents than the number of items on this checklist. Also, some documentation requirements only apply in certain situations. For more information, see the full requirement description.

## SOFTWARE TEST REQUIREMENTS

The following checklist describes the documentation that you must include when you submit your solution for first-time testing.

Requirement	Included
Your solution with product documentation. Depending on the testing vendor, you can provide this with distributable media, a VHD image, a VM, an online conferencing session to demonstrate your solution or with remote access to an environment with your solution already installed in it.	
Description of the business functionality that your solution provides and examples of key usage scenarios. See <a href="#">Appendix B</a> .	
Explanation and justification for any FxCop errors. See <a href="#">Requirement 1.1</a> .	
List of all vendor or third-party assemblies. See <a href="#">Requirement 1.2</a> .	
Screenshots of the following pages in Portable Network Graphic (PNG) format, taken with either the Business Central web client, or with the Dynamics NAV client (for Windows) connected to Business Central  Role Centers for up to five new or revised key user profiles in the solution. <ul style="list-style-type: none"><li>• (Windows client only) Make sure that all views, which are shown as indented links under List Places in the navigation pane, are expanded.</li><li>• Take each screenshot in: a maximized window at a 1280 × 1024 screen resolution.</li></ul> Most frequently used (two to three) unique lists in each of the Role Centers for the key user profiles. <ul style="list-style-type: none"><li>• (Browser and Desktop app only) The filter pane must be visible, revealing the set of views applicable to that list.</li><li>• Take each screenshot in a maximized window at a 1280 × 1024 screen.</li></ul> Task Page (card or document page) that opens when you drill down to a record in each of the most frequently used lists. <ul style="list-style-type: none"><li>• Take each screenshot in a 1280 × 1024 screen resolution .</li><li>• FastTabs and the FactBox pane must be expanded.</li><li>• (Windows client only) The ribbon must be expanded.</li><li>• (Web client only) The action bar must be pinned.</li></ul>	

<ul style="list-style-type: none"> <li>The requirement is for a single screenshot for the list places and task pages, no matter how many RoleCenters they are used in.</li> </ul> <p>Justification explaining why the solution does not meet specific user experience requirements.</p> <p>For more information about the user experience requirements, see <a href="#">Requirement 3.1</a>.</p>	
<p>Partner-facing installation and configuration guide that is appropriate for value-added resellers (VAR) or other people who intend to deploy your solution. See <a href="#">Requirement 2.2</a>.</p>	
<p>Explanation of any functionality that restricts the functionality of Business Central on-premises. See <a href="#">Requirement 3.2</a>.</p>	
<p>Customer-facing document that identifies the languages solution supports.</p> <p>Solution must use the multilanguage capabilities of Business Central on-premises unless they are intended for one country/region only. See <a href="#">Requirement 4.1</a>.</p>	
<p>Description of all registry settings that are generated during installation. See <a href="#">Requirement 6.2</a>.</p>	
<p>List of all components, including external components that your application uses. For .NET Framework interoperability, you must specify if they target Business Central on-premises Windows clients, Business Central on-premises Server, or both. For Automation components that target Business Central on-premises clients, you must provide the main user scenarios when you submit your solution.</p> <p>For more information, see <a href="#">Requirement 1.8</a>, <a href="#">Requirement 1.9</a> and <a href="#">Requirement 1.10</a>.</p>	
<p>List of application objects submitted for test in a Microsoft Excel workbook. See <a href="#">Requirement 0.1</a>.</p>	
<p>List of available web services. For each web service, you must provide the following information:</p> <ul style="list-style-type: none"> <li>IDs of the objects (pages and codeunits) that are exposed as web services.</li> <li>List each object in table 200000076, Web Service.</li> <li>If your web service runs in an External Connector licensing scenario, information about why this is a valid External Connector scenario.</li> </ul> <p>See <a href="#">Requirement 0.1</a> and <a href="#">Requirement 1.6</a>.</p>	

List of all services that are used by the ISV solution to access Business Central on-premises data, such as SQL Server Analysis Services.  ISV solutions must access data using the Business Central on-premises business logic and respect the Business Central on-premises security model. See <a href="#">Requirement 1.8</a> .	
Description of which Business Central on-premises license is required for solution installation. See <a href="#">Requirement 6.7</a> .	
List of all resources that your solution adds to Business Central on-premises and complete instructions for uninstalling your solution. If you cannot uninstall your solution, then you must state this in the installation instructions documentation. See <a href="#">Requirement 6.8</a> .	
Sample data for testing. This does not need to be part of the core solution installation. See <a href="#">Requirement 6.9</a> .	
List of company types that your solution adds or modifies using RapidStart Services configuration packages. See <a href="#">Requirement 6.11</a> .	
RapidStart Services usage questionnaires in <a href="#">Appendix C</a> . See <a href="#">Requirement 6.11</a> .	
Description of backup and restore procedures. See <a href="#">Requirement 7.1</a> .	
VAR-facing customization and extensibility guide, which is commonly known as a developer's guide that explains how to extend your solution. See <a href="#">Requirement 2.3</a> .	
Database upgrade scripts and documentation. See <a href="#">Requirement 8.1</a> .	

## ISV SOFTWARE SOLUTION REQUIREMENTS AND RECOMMENDATIONS

The Business Central on-premises ISV Software Solution Test Guidelines help ensure that ISV solutions interoperate with Business Central on-premises without causing problems or errors. Microsoft and third-party test vendors worked together to define the minimum requirements that an ISV solution must meet to operate successfully with Business Central on-premises.

Note: The test does not validate the correctness or relevance of ISV solution functionality.

This section describes the test requirements and recommendations and the procedures for verifying that each requirement is met. In this document, the word *must* in the text of a requirement means that the item or feature is required. The word *should* means that the item or feature is recommended and its inclusion is a best practice, but it is not strictly required. These recommendations may be considered for inclusion as requirements in later versions of this test.

Some requirements are technology specific and do not apply to all ISV solutions. Therefore, each requirement indicates the type of ISV technology to which it applies. Additionally, an ISV solution may include several technologies. In these situations, the vendor will test those parts of the solution that use the technologies to which the requirement or recommendation applies.

Technology	Applicable to
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C/SIDE	<p>Any code that is written in C/AL (either business logic or code that implements an integration to an external component), if the vendor in-lab test is performed directly on the code.</p> <p>Any solution that includes C/AL code, if the vendor in-lab test is not performed directly on the code.</p>
External	<p>Any code not written in C/AL (including DLLs, services, and applications that have their own user interface), if the vendor in-lab test is performed directly on the code.</p> <p>Any solution that includes such code, if the vendor in-lab test is not performed directly on the code.</p>
WSExposed	<p>Pages or codeunits that are designed to be exposed as web services, if the vendor in-lab test is performed directly on the code.</p>
WSCalling	<p>Any code that is not written in C/AL and calls web services in Business Central on-premises, if the vendor in-lab test is performed directly on the code.</p>
All	<p>All code</p>

## SUITABILITY REQUIREMENTS

Your solution must meet the following suitability requirement before any other test is performed.

- [Requirement 0.1: Application objects that are submitted for testing must be listed in an Excel workbook.](#)

0.1 Application objects that are submitted for testing must be listed in an Excel workbook.

Type	Test method	Technology	Solution category		
Required	In-lab review	C/SIDE	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

When an ISV solution is submitted for testing, it will contain a number of application objects that must be listed by the ISV. If the ISV solution implements any web services, then when the solution is submitted for testing, it will also contain a number of application objects (pages, codeunits and queries) that are exposed as web services. To provide customers and potential reselling partners with an overview of which objects have been tested, this list will be attached to the final certification report and made available in Solution Finder.

### *RESOURCES*

None.

### *HOW TO COMPLY*

Provide a list of application objects in an Excel workbook. Copy the required fields of all application objects submitted for testing from the object designer into an Excel workbook. The Excel workbook must contain the following columns in the following order: Object ID, Object Name, Object Type, Version, and WSEExposed. The WSEExposed column specifies if the object is exposed as a web service. If the object is exposed as a web service, then mark it as TRUE. Otherwise, mark it as FALSE.

### *TEST METHODOLOGY*

To verify this requirement, the test vendor will follow these steps:

For object verification:

1. Open Object Designer, and then choose the All Objects button.
2. When all objects are displayed, select all Business Central on-premises objects that were modified by the ISV.
3. Copy the names of these objects to an Excel workbook.
4. Compare this file with the Excel workbook that was received from the ISV.
5. Note any discrepancies.

For web services verification:

6. Identify the pages, codeunits and queries that are designed to be exposed as web services. After the ISV solution has been deployed, pages, codeunits, queries that are exposed as web services are displayed on the Web Service table (table 200000076).
7. Compare the contents of the Web Service table with the Excel workbook that was received from the ISV.
8. Note any discrepancies.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution contains objects or web services that are not included in the list that is provided by the ISV, then it will fail the test.



## DEVELOPMENT REQUIREMENTS

Your solution must meet the following requirements:

- [1.1 The solution-specific managed code must be compiled with at least the .NET Framework 4.7.2 and must pass the required code analysis tests.](#)
- [1.2 Managed assemblies must be strongly named and signed.](#)
- [1.3 New application objects must use their assigned number range.](#)
- [1.4 The ISV solution must follow standard Business Central on-premises version conventions and provide code comments for changed Business Central on-premises objects.](#)
- [1.5 Externally exposed URLs must be configurable.](#)
- [1.6 Code paths for web services must be protected from end-user interaction.](#)
- [1.7 The ISV solution must make its version information available.](#)
- [1.8 The ISV solution must perform all data access through Business Central on-premises business logic.](#)
- [1.9 .NET objects that run on Business Central on-premises Server must not generate any UI.](#)
- [1.10 Client-side .NET Framework Interoperability add-in assemblies and control add-in assemblies must be named correctly.](#)

1.1 The solution-specific managed code must be compiled with at least the .NET Framework 4.7.2 and must pass the required code analysis tests.

Type	Test method	Technology	Solution category		
Required	In-lab test	External	Simple	Complex	Hosted
		Managed code	✓	✓	✓

### SUMMARY AND INTENT

ISV applications that use code from the Microsoft .NET Framework must use at least the .NET Framework 4.7.2 and must pass the code analysis test provided by Visual Studio and Microsoft FxCop. Visual Studio includes code analysis tools that check .NET Framework assemblies for conformance to .NET Framework design guidelines. We recommend using the .NET Framework 4.7.2 when creating your solution.

### RESOURCES

Visual Studio includes code analysis tools. For more information, see [Analyzing Managed Code Quality by Using Code Analysis](#) on the Docs.microsoft.com site.

### HOW TO COMPLY

When you develop assemblies using Visual Studio, use the code analysis tools that are included in Visual Studio and implement the relevant changes.

To pass this requirement, you must act on all critical errors for all issues and on errors for security issues. It is a good practice to act on all issue types of all importance levels. For example, you can suppress an error by explaining the reason for violating the rule and why it is not a valid issue. You can suppress a violation. For more information, see [In-Source Suppression Overview](#). You must provide information about in-source suppressions.

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Note: Suppressing an error and explaining the reason for the violation does not guarantee that a waiver will be granted by the vendor or Microsoft.

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### TEST METHODOLOGY

The test vendor will use the FxCop tool to analyze the ISV solution. If FxCop reports any critical errors or any security errors, the ISV must provide a written explanation and justification in the tool or in a separate document.

### CRITERIA FOR PASSING

This requirement is mandatory. If the ISV solution does not pass this requirement, it will fail the test.

## 1.2 Managed assemblies must be strongly named and signed.

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
		Managed code	✓	✓	✓

### SUMMARY AND INTENT

This requirement is included for security purposes. You can ensure that a name is globally unique by signing an assembly with a strong name. In particular, strong names satisfy the following requirements:

- Guarantees name uniqueness by relying on unique key pairs.
- Protects the version lineage of an assembly.
- Provides a strong integrity check.

### RESOURCES

The Sn.exe tool that is provided with Microsoft Visual Studio and with the .NET Framework 4.7.2 supports the proper use of strong names. For more information about the Strong Name tool, see [Strong Name Tool \(Sn.exe\)](#).

### HOW TO COMPLY

You must use strong naming for managed assemblies. If your solution uses a vendor or third-party assembly, then the assembly must also be signed. You must provide a list of vendor or third-party assemblies.

### TEST METHODOLOGY

The test vendor will use the list of assemblies that are provided as a documentation requirement and use the Sn.exe tool that is provided with Visual Studio to verify the proper use of strong names.

### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not use strong naming for managed assemblies, then it will fail the test.

### 1.3 New application objects must use their assigned number range.

Type	Test method	Technology	Solution category		
Required	In-lab review	C/SIDE	Simple	Complex	Hosted
			✓	✓	✓

#### *SUMMARY AND INTENT*

When an ISV solution is registered, Microsoft Dynamics Sales Operations will assign a specific range of object numbers for that solution to use. All new objects that are installed by the solution must use this number range. All new application objects must have unique functionality. There may not be any empty objects in the solution.

#### *RESOURCES*

See the Microsoft Dynamics Sales Operations document, which is provided to you by your Regional Operations Center when registering your add-on with Microsoft, to obtain a number range for objects in your solution.

The number range is assigned as part of the registration process of your add-on solution as described in your Add-on Applications Addendum and on PartnerSource. For more information, see [Registered Solution Program page](#) on PartnerSource (requires PartnerSource account).

#### *TEST METHODOLOGY*

The test vendor will obtain the registered object number range for the solution and verify that all new objects are in this number range as well as that there are no empty objects among them.

#### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution adds objects that are outside of the assigned object number range, then it will fail the test unless the solution includes objects that are provided by other ISVs and are declared as part of the solution under test. If the solution adds objects that do not have unique functionality and are empty, then it will fail the test. Other exceptions may apply to this requirement if the ISV provides a valid reason for it.

### 1.4 The ISV solution must follow standard Business Central on-premises version conventions and provide code comments for changed Business Central on-premises objects.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

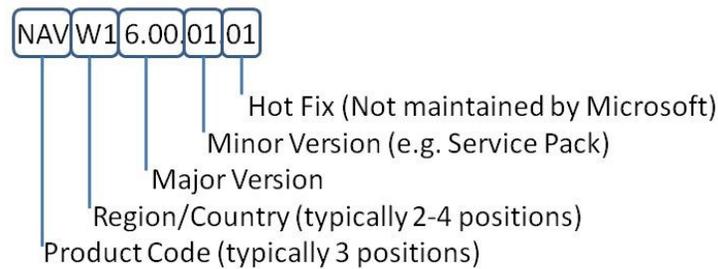
#### *SUMMARY AND INTENT*

Your solution must follow standard Business Central on-premises versioning conventions. In your version list of new and customized objects, names and version numbers must be consistent. In addition, if you have modified any Business Central on-premises objects, then you must insert code comments that identify the changes and list the changes and corresponding version numbers on your version list.

All unmodified objects from Business Central on-premises must be from the latest version of Business Central on-premises with the latest service pack, and all modified Business Central on-premises objects must be based on the latest version of the Business Central on-premises objects.

## RESOURCES

The following illustration demonstrates the Version List labelling of all objects that are provided in Business Central on-premises.



Note that labelling hotfixes is a recommended approach when applying hotfixes in an installation and does not exist in objects that are provided by Microsoft.

## HOW TO COMPLY

Ensure that version information for your solution follows the Business Central on-premises conventions and that you have clearly identified any modified Business Central on-premises objects. When you modify objects that are provided by Business Central on-premises, you must add a comma-separated reference to the version of your solution. We recommend that you do not use Business Central on-premises and other product codes that are used by Business Central on-premises. You can use any other conventions for versioning of your own objects. We recommend aligning your versioning conventions with the Microsoft versioning conventions for major and minor version and hotfix references. There are no restrictions to the number of characters that can be used to reference the Product Code or Region/Country segments of the Version List.

You must also ensure that all modifications to Business Central on-premises objects are migrated to the latest version of the standard Business Central on-premises objects. Within modified objects, you must clearly delimit your code from the standard Business Central on-premises code. You can use comments to indicate where your modifications begin and where they end. You should also comment your code's functionality.

## TEST METHODOLOGY

To verify this requirement, the test vendor will follow these steps:

1. Check that the version list of new and customized objects is consistent. If standard Business Central on-premises objects have been modified, then you must mark the modifications with a code and version number. The Modified flag for the specified object must not be set to Yes.
2. Check the version information of the modified objects so that the version information contains both a Business Central on-premises version number and an ISV version number. The Business Central on-premises version number must be identical to the version number of that object in the latest version of Business Central on-premises with the latest cumulative update installed.
3. Check the version information of the unmodified objects, where the version information contains only the Business Central on-premises version. The version number, date, and time must be identical to the same information in the latest version of Business Central on-premises with the latest cumulative update installed.
4. Select multiple standard application objects that the ISV has modified and compare the code with the standard version of the object. Check that the ISV has commented all code changes to identify the changes.

## CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not follow Business Central on-premises version conventions or if comments for code changes to Business Central on-premises objects are missing, then it will fail the test. If the solution is not based on the latest version of standard Business Central on-premises objects, then it will fail the test.

## 1.5 Externally exposed URLs must be configurable

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

A web service solution must not be tied to a particular network configuration. The URL of the hosting machine can change, additional hosts can be added, or proxies or load balancers can be introduced. Editing or recompiling source code to perform these types of changes is counterproductive because it ties a customer to the owner of the source code and makes it harder to deploy the solution to multiple locations and install for multiple customers.

### *RESOURCES*

For more information, see [Configuring Business Central Server](#) and [GETURL method](#) on the Docs.microsoft.com site.

### *HOW TO COMPLY*

Use the GETURL method to ensure that a deployed solution can be made to point to multiple web services without having to edit source code, recompile source code, or run proprietary software to change the configuration. We recommend that you follow existing practices, such as configuration files or registry entries, for configurable elements.

### *TEST METHODOLOGY*

To verify this requirement, the test vendor will follow these steps:

1. Identify the method of URL configuration, which must be described in the installation and configuration guide as described in [Requirement 2.2](#). The following URL parts must be configurable and cannot be hardcoded:
  - Host
  - Port
  - Business Central on-premises service instance
  - Company name
2. Verify that the solution can be configured as described in the installation and configuration guide. This may involve looking for registry entries or configuration file entries and checking that changes to those places are reflected in the solution's behavior. Restarting the ISV solution may be required.
3. Verify the following scenarios:
  - The solution works with at least two different Business Central on-premises hosts.
  - The solution works with at least two different Business Central on-premises port configurations. You can configure this in the Business Central on-premises Administration Tool, and in the CustomSettings.config file for the Business Central on-premises service.
  - The solution works with at least two different Business Central on-premises service instance configurations. You can configure this in the Business Central on-premises Administration Tool, and in the CustomSettings.config file on the computer running Business Central on-premises Server.
  - The solution works with at least two different company names. A company can be renamed in the Companies windows.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If a solution does not allow the externally exposed URL to be changed without recompiling or editing the source code, then it will fail the test.



## 1.6 Code paths for web services must be protected from end-user interaction.

Type	Test method	Technology	Solution category		
Required	In-lab review	WSExposed	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

When writing code for web services, you must not use end-user confirmation dialog boxes, message boxes, or any other page constructs in the code. Because a web service runs independently of a user interface, running this type of code causes the code to throw an exception. The exception can be caught and handled, but the web service will not complete.

### RESOURCES

For more information, see [Business Central Web Services](#) on the Docs.microsoft.com site.

### HOW TO COMPLY

Ensure that code for pages and codeunits that is designed to be exposed as web services do not use any end-user confirmation dialog boxes or message boxes. Code paths requiring user interaction must be protected.

### TEST METHODOLOGY

To verify this requirement, the test vendor will follow these steps:

1. Identify the pages and codeunits that are designed to be exposed as web services. After the ISV solution has been deployed, pages and codeunits that are exposed as web services are listed in table 200000076, Web Service.
2. If direct code inspection is feasible, depending on the complexity of the pages and codeunits and the objects that they call, then the functions from the following table should not be used without conditional code that is based on GUIALLOWED=FALSE or CurrFieldNo=0 circumventing their call. These conditions indicate usage from web services.

C/AL function	Applies to
CONFIRM	Codeunit/page
STRMENU	Codeunit/page
(Form RunModal)	Page
Page of type Confirmation Dialog	Page
(Request page)	Page
YIELD	Codeunit/page

Additionally, when running the page or codeunit as a web service, the following exception should never occur:

Microsoft.Dynamics.Nav.Types.Exceptions.NavNCLCallbackNotAllowedException: Callback functions are not allowed.

### CRITERIA FOR PASSING

This requirement is mandatory. If the solution uses end-user confirmation dialogs or message boxes in the code that is exposed to a web service, then it will fail the test.

## 1.7 The ISV solution must make its version information available.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

For support purposes, a user must be able to identify the version of your solution from the user interface. For example, you could include this information in an About dialog box, another window, or another format.

### *RESOURCES*

None.

### *HOW TO COMPLY*

Ensure that version information for your application is available to the user.

### *TEST METHODOLOGY*

The test vendor will verify that version information is available to the user.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not comply with this requirement, then it will fail the test.

---

Note: This requirement does not apply to user interfaces that are designed for special devices, such as handheld devices or cash registers.

---

## 1.8 The ISV solution must perform all data access through Microsoft Dynamics Business Central on-premises business logic.

Type	Test method	Technology	Solution category		
Required	None	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

To ensure that the ISV solutions maintain data consistency, comply with the Business Central on-premises security model, and do not reduce the security level that is present for Business Central on-premises, all access to data must be performed through Business Central on-premises business logic.

### *RESOURCES*

For information about the Business Central on-premises security model, see [Security and Protection in Business Central](#) on the Docs.microsoft.com site.

For information on setting up a Windows service account, see [Configure Windows Service Accounts and Permissions](#) in the SQL Server documentation.

## HOW TO COMPLY

Ensure the following:

- All services that are used to access Business Central on-premises must be run on a least-privileged account (non-*sysadmin*) account.
- All external components must run with least privilege.
- Only business logic is used to perform the access to data.
- Provide non-SUPER roles for testing your solution.

## TEST METHODOLOGY

The test vendor will:

1. Install the ISV solution on at least a two-computer (server-client) setup.
2. Ensure that the Business Central on-premises security system is activated by creating at least one user. For more information, see [Managing Users and Permissions](#) in the Business Central documentation.
3. Open the Windows Services panel on the computer running Business Central on-premises Server and ensure that the service tier is running with the least-possible privileges
4. Open the Business Central on-premises Windows client as an existing Business Central on-premises user who:
  - Is not assigned to the SUPER user account. Use the non-SUPER user account provided by the ISV.
  - Is not an administrator on the client computer.
  - Is not *sysadmin* or owner of the Business Central on-premises database.
5. Execute the scenarios that are provided with the documentation (see [Appendix B](#)).

During the execution of the scenarios, the test vendor will verify that all services that are accessing the Business Central on-premises system as provided by the ISV in the documentation requirements are running on a least-privileged account and note any discrepancies.

## CRITERIA FOR PASSING

This requirement is mandatory. If the ISV solution does not pass this requirement, then it will fail the test.

1.9 .NET Framework-Based objects that run on Business Central on-premises Server must not generate any UI.

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
			✓	✓	✓

## SUMMARY AND INTENT

All .NET Framework-based objects that allow a user interface to be generated cannot target Business Central on-premises Server. Because Business Central on-premises Server runs as a service, it is running in the security context of the built-in Network Service account. This service account has limited permissions for UI objects.

## RESOURCES

For more information, see [Extending Microsoft Dynamics NAV Using Microsoft .NET Framework Interoperability](#) on the Docs.microsoft.com site.

## HOW TO COMPLY

Ensure that only in-process .NET Framework objects with no user interface target Business Central on-premises Server.

## TEST METHODOLOGY

Run the scenarios that are provided with the documentation with .NET Framework-based objects that target Business Central on-premises Server and verify that Business Central on-premises Server does not throw errors or expose any dialog boxes or pages, stop responding, or exit unexpectedly. For more information, see [Appendix B](#).

## CRITERIA FOR PASSING

This requirement is mandatory. If the solution has .NET Framework-based objects that generate a user interface and target Business Central on-premises Server, then it will fail the test.

## 1.10 Client-side .NET Framework Interoperability add-in assemblies and control add-in assemblies must be named correctly

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
			✓	✓	✓

## SUMMARY AND INTENT

If the solution adds client-side .NET Framework interoperability add-in assemblies or control add-in assemblies to Business Central on-premises, the assemblies must have the same assembly name in Business Central on-premises as the name that is defined in the ControlAddInExport attribute within that assembly. Inter-dependent add-ins must be placed in the same subfolder of the `\Add-ins` folder on the server computer where Business Central on-premises Server is installed.

This is to make sure that Business Central on-premises Server can find these assemblies in the `\Add-ins` folder and pass them over to the client devices automatically.

## RESOURCES

See [Registering the Control Add-in in Dynamics NAV](#) topic on the Docs.microsoft.com site.

## HOW TO COMPLY

Ensure that the client-side .NET Framework interoperability add-in assemblies and control add-in assemblies have the same assembly name as the name that is defined in the ControlAddInExport attribute in these assemblies.

If the solution adds one or more inter-dependent add-ins, they must be placed in the same subfolder of the `\Add-ins` folder on the server computer where Business Central on-premises Server is installed.

## TEST METHODOLOGY

1. All relevant client-side .NET Framework interoperability add-in assemblies and control add-in assemblies are placed in the `\Add-ins` folder on the Business Central on-premises Server machine. The add-ins are not present in the `\Add-ins` folder on the Business Central on-premises client machine.
2. Start the Business Central on-premises Windows client (installed or through ClickOnce) and invoke the logic that uses these add-ins, such as opening the relevant page or running the relevant batch job.
3. The logic must execute without complaining about missing assemblies. The assemblies must be present in the `%TEMP%\Microsoft Dynamics NAV\Add-ins\` folder on the client machine.

## CRITERIA FOR PASSING

The logic that uses the assemblies must execute successfully without complaining about missing assemblies. The assemblies must be present in the `%TEMP%\Microsoft Dynamics NAV\Add-ins\` folder on the client machine.

# USER ASSISTANCE AND PRODUCT DOCUMENTATION REQUIREMENTS AND RECOMMENDATIONS

Your solution must comply with the following requirements and should comply with the following recommendation:

- [Requirement 2.1: The ISV solution must include Help that is targeted to the solution user.](#)
- [Requirement 2.2: The ISV must provide an installation and configuration guide.](#)
- [Requirement 2.3: The ISV must provide documentation for VARs.](#)
- [Recommendation 2.4: Solution Help should follow the style guidelines that are used by Microsoft.](#)

## 2.1 The ISV solution must include Help that is targeted to the solution user.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

You must provide user assistance that helps users Get Started and Get Unblocked, and content where they can Learn More about your solution. If necessary, also provide Help for administrative tasks. Customizing Help to match your customizations helps increase customer satisfaction with your solution and reduces your support costs.

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Note: This requirement does not apply to functionality that runs on a device that is not exposed within the Business Central on-premises user interface, such as handheld devices or cash registers. In these scenarios, you should provide user documentation that is appropriate to the user interface.

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With Microsoft Dynamics Business Central on-premises, Microsoft supplies user assistance as user interface text – captions, setup guides, and better guidance in error messages. This helps users get started, and Microsoft also provides tooltip-like text that helps users get unblocked. You can deliver user assistance in the same way as Microsoft, or by providing Learn More content in a Help Server instance or similar.

The Help Server is a website that you set up and configure for the users of your solution. Content that is deployed to a Help Server can be accessed from all Business Central on-premises clients. Help must be translated into all languages that a solution supports. Localizations outside of the customized help translations must have a standard help translation included.

### RESOURCES

To satisfy this requirement, you must demonstrate that you can deploy a Microsoft Dynamics Business Central on-premises Help Server that provides Help that can be accessed from the UI of your solution. For more information, see [Configuring the Help Experience for Dynamics 365 Business Central](#) in the docs.microsoft.com Library. In the Business Central on-premises documentation you can find guidelines for creating Help that can be deployed to your Business Central on-premises Help Server.

## HOW TO COMPLY

User assistance for a Business Central on-premises solution must provide a user experience that is consistent with the base documentation. It must be easy for the user to access and to navigate. You must provide the following:

- Tooltips or Help to explain all added or changed objects if these objects surface in the Business Central on-premises user interface or are expected to be customized by other partners or solution providers.
- If you have customized objects that were provided by Microsoft, then you must customize the user assistance accordingly. You can update the tooltips and Help that Microsoft provides, or you can create new tooltips or Help that replaces all or part of the Microsoft-provided user assistance.

All content that you provide must contain appropriate ownership and copyright information. For more information about requirements for addressing copyright issues, see [Copyright Attribution Requirements](#) on the Docs.microsoft.com site.

- Help to assist solution users understand how a feature works and is used.
- Your Help content for solution users must be accessible from the user interface.
- For each new window in your solution, you must access to Learn More content about the scenarios that the window supports, such as providing context-sensitive Help that opens in your Business Central on-premises Help Server website. For example, if you create page 50000, then you deploy a topic with the filename N\_50000.htm to the relevant language folder on your version of the Help Server. The topic can contain audience-appropriate Help content, or it can redirect to a conceptual topic or the document or location that provides this Learn More content.
- If you choose to make the Help available as PDF documents or similar, users must be able to access the documents from links in the navigation pane in the Help Server website.
- If the audience of your solution is primarily device users, you can prioritize documenting the main scenarios for this usage by creating overview topics that can be accessed through the Help action. If your solution caters for all types of devices, including desktop, then you must adhere to the rules for documenting the Windows and Web clients. This is how the Help shipped with the standard version of Business Central on-premises is built.

We recommend that you update the documentation feedback script to send documentation feedback email messages to you. If you are creating new Help projects or editing projects that were provided by Microsoft, then you should maintain different versions of the Feedback.js file.

## TEST METHODOLOGY

The test vendor will review your Help documentation for compliance and usability. You can grant the test vendor access to your Business Central on-premises Help Server website for verification. Alternatively, if you submit your solution as a VHD file, you can include your Help Server website on the virtual disk.

For functionality that is exposed within Business Central on-premises clients, the test vendor will review a representative sample of application modules to make sure that Help is available when a user presses F1 (Business Central on-premises Windows client), chooses the Learn More link in a tooltip (Business Central on-premises Windows client and Business Central on-premises Web client), or chooses the Help action (Dynamics 365 Business Central Universal App). The test vendor will also verify that the same content can be found by using Search in the Help Server website, and that the table of contents navigation provides an entry point to key conceptual content for the relevant application areas. For functionality that is exposed within one of the Business Central on-premises device clients; tablet or phone, the test vendor will review a representative sample of application modules to make sure that Help is available from the action pane and describes the main scenarios.

For functionality that is not exposed within Business Central on-premises clients, the test vendor will review your documentation to verify that you have included adequate Help information.

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Note: The test vendor will only validate that the required information is included. The vendor will not verify the quality or technical accuracy of the information.

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## CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not provide Help documentation, then it will fail the test.

### 2.2 The ISV must provide an installation and configuration guide.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

## SUMMARY AND INTENT

If your ISV solution is deployed and/or installed in a non-standard way, you must include an installation and configuration guide in your documentation. If you do not use partners to sell your solution, then you must provide installation and configuration information to customers. If your solution is implemented only by your employees or is hosted by you, then an internal document explaining how your product should be implemented must be provided to the test vendor. If your solution is implemented exclusively by importing application code from a .fob file, this requirement does not apply.

ISV partners and customers who use or deploy a solution must be able to successfully deploy, configure, and manage the solution in an existing Business Central on-premises environment. Your documentation must provide information that allows partners and customers to successfully install or upgrade your solution in this environment.

## RESOURCES

See the [Deployment of Dynamics 365 Business Central](#) and the installation and configuration information in Help, when you create your solution-specific guide.

## HOW TO COMPLY

Include adequate system requirements, installation, configuration, and upgrade documentation to allow your employees, a partner, or a customer to implement your solution in a new or existing Business Central on-premises environment. This can take the form of one document, or you can also refer to separate documents for additional information. We recommend that you use one of the following formats: Word document, .pdf, or html page.

A compliant guide will contain the following sections:

- Description of the solution, which describes the problem that the solution solves.
- Hardware and operating system requirements.
- Installation and configuration tasks and walkthroughs.
- Operational checklist, which includes information about performing daily, monthly, and annual procedures; performing backups; and other related tasks.
- Security hardening information, which describes how the solution is deployed in a more secure manner.

## TEST METHODOLOGY

The test vendor will review your documentation to verify that you have included adequate implementation information.

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Note: The test vendor will only validate that the required information is included. The vendor will not verify the quality or technical accuracy of the information.

---

## CRITERIA FOR PASSING

This requirement is mandatory. If the solution documentation does not include an installation and configuration guide, then it will fail the test.

## 2.3 The ISV must provide documentation for VARs.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

*\*Required if the solution is distributed through value-added resellers.*

### SUMMARY AND INTENT

Customers and VARs frequently customize and extend business software. Therefore, you must provide documentation that explains your solution and how to customize it if this is different from the default customization story for Business Central. You must provide documentation that thoroughly describes your solution, how it works, and how it can be customized. The documentation provides a more technical explanation of the solution than the documentation that targets the solution user. Its purpose is to give value-added resellers (VAR) a solid understanding of the solution to help them customize and sell the solution to customers.

### RESOURCES

See Developer and IT Pro Help documentation when creating your solution-specific documentation at <https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/>.

### HOW TO COMPLY

Document your customization and extensibility procedures in a developer's guide. You should provide an overview that explains the customization and extensibility strategy and detailed information about each API, web service, and other components that your solution exposes.

The documentation can be in the form of a separate Microsoft Word document, a .pdf document, a reference section on the Business Central on-premises Help Server, or another website.

A compliant guide should contain the following sections:

- An overall description of the solution and the business problem that it solves. Include the target audience for the solution and usage scenarios. For an example, see [Design Details: Supply Planning](#) on the Docs.microsoft.com site.
- An explanation of the data model for the solution, including:
  - A description of new and modified tables, including fields and stored data types.
  - New and modified functionality and its interaction.
  - A description of new and modified, objects that are used to gather, process, and display data from the tables including pages, reports, queries, XMLports, codeunits, client control add-ins, and .NET Interoperability objects.
- Describe the C/AL code that connects the application objects.
- For client control add-ins, describe the purpose and the underlying code. For an example, see [Displaying Charts Using the Chart Control Add-in](#) on the Docs.microsoft.com site.
- For .NET Framework interoperability, describe the functionality, its usage, and any configuration or customization. Explain underlying code and C/AL variables.
- A description of how the VAR can customize the solution. You should provide an overview that explains the customization and extensibility strategy and detailed information about each API, web service, and other components that your solution exposes. Include conceptual information and procedures.

If the ISV does not use value-added resellers to distribute their solution, then the requirement is not mandatory.

## TEST METHODOLOGY

The test vendor will review your documentation to verify that you have included adequate implementation information.

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Note: The test vendor will only validate that the required information is included. The vendor will not verify the quality or technical accuracy of the information.

---

## CRITERIA FOR PASSING

This requirement is mandatory. If the ISV solution does not pass this requirement, then it will fail the test.

2.4 Solution Help should follow the style guidelines that are used by Microsoft.

Type	Test method	Technology	Solution category		
Recommended	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

## SUMMARY AND INTENT

The documentation for your solution should follow Microsoft style guidelines. It should tell the user about available capabilities, help users get unblocked, and it should be easy for the user to understand. Documentation for a Business Central on-premises–certified solution should provide a user experience that is consistent, in writing style and depth of information, with the documentation that is provided with Business Central on-premises.

To the extent that your solution extends or customizes the standard version of Business Central, you must customize the standard Help as described in the [Contributor Guide](#).

## RESOURCES

- We recommend that you familiarize yourself with the Microsoft standards and style, which is a way to secure a consistent user experience in the documentation. Using the Business Central on-premises stylesheet is, however, a recommendation only.
- The *Microsoft Writing Style* is available at the [WorldReady](#) site that is accessible if you are a Microsoft partner. The site contains the standards and best practices that Microsoft uses in creating user interface text and user assistance.

To satisfy this recommendation, you should use the information that is provided in the Microsoft-provided Help that is included in Microsoft Dynamics Business Central on-premises to deliver your user assistance.

## HOW TO COMPLY

Ensure that you have Help that provides meaningful information. The guidelines at the [WorldReady](#) site help you create appropriate content.

## TEST METHODOLOGY

The test vendor will review your Help documentation for style, accuracy, and usability. The vendor will review a representative sample of application modules to ensure that Help topics are appropriate, easy to understand, correct, and adhere to style and user interface guidelines.

## CRITERIA FOR PASSING

This is a recommendation only. Failure to comply with this recommendation will not cause the solution to automatically fail the test.

## USER EXPERIENCE REQUIREMENTS

Your solution must comply with the following requirements:

- [Requirement 3.1: The ISV solution must comply with core Windows and Business Central on-premises user experience guidelines.](#)
- [Requirement 3.2: The ISV solution that restricts the functionality of Business Central on-premises must document the restriction.](#)

3.1 The ISV solution must comply with core Windows and Business Central on-premises user experience guidelines.

Type	Test method	Technology	Solution category		
Required	In-lab review	C/SIDE	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

User experience requirements are part of the test requirements review.

Users of your solution must have a user experience that is consistent with Business Central on-premises. It is important that users can reuse the knowledge they build from using standard Business Central on-premises and expect to complete similar tasks in your solution by using the same user interface elements and the same interaction steps as in the standard application. Therefore, the user interface for your application must comply with the Business Central on-premises user experience guidelines and with the Windows user experience guidelines.

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Note: This requirement does not apply to user interfaces that are designed for special devices, such as handheld scanners or cash registers. Additionally, there may be other justifications for deviating from the standard user experience guidelines. You must include these justifications with the application when you submit it for testing. The justifications will be evaluated during the test process.

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### RESOURCES

See the [Customizing Business Central](#) and [Designing Role Centers](#) on the Docs.microsoft.com site. For topics that are not covered by these guidelines, see the [Microsoft Windows Design Guidelines](#) on the Docs.microsoft.com site.

### HOW TO COMPLY

Observe the following user experience requirements. If your user experience deviates from these requirements, then you must prepare a justification for the deviation. Include this justification in your software submission package. Some requirements are specific to the Business Central on-premises Windows client, the Business Central on-premises Web client, or the Business Central on-premises Tablet or Phone client. If no client is specified, the requirement applies to all deployments.

1. Keyboard Access
  - 1.1. (Windows client only) Users must be able to operate the solution using keyboard only.
2. RoleCenter pages added or modified by the solution
  - 2.1 Each cue group must contain 1 to 6 cues.
  - 2.2. The Role Center must show at least one chart part.
    - 2.2.1 A justification can be provided stating why a specific Role Center should not show any chart parts. For example: "The service technician user profile will only give access to basic workflows involving time registration and therefore only needs to show a list part with the list of time registered this week.
    - 2.2.2. If no chart part is shown, there must be at least one part of another type.

- 2.2.3. (Tablet client only) Role Center parts must be sequenced to show a chart part first (vertically from top to bottom).
- 2.3. (Tablet client only) Role Center parts must not have more than 7 actions and action groups at first level and must not have more than 12 actions and action groups in total.
- 2.4. On the Windows client, there must be a Home activity button in the navigation pane with the most frequently used lists/views. On the Web client, there must be the most frequently used lists under the company name.
- 2.5. On the Windows client, the navigation pane must contain no more than 8 activity buttons, not counting the Home and Departments activity buttons. On the Web client, the navigation bar must contain no more than 8 top-level groups.
- 2.6. (Windows client only) There must be a Departments button to provide access to infrequently used links.
  - 2.6.1. A justification can be provided stating why a specific user profile should not show the Departments button. For example: “The user profile warehouse temp is intended for people in short-term employment who will only be allowed to access the few pages that are displayed in their navigation pane”.
- 3. Ribbon (Windows client) or action bar (Web client) on pages added or modified by the solution
  - 3.1. The page must contain promoted actions, related information, and reports when such are defined by the page.
    - 3.1.1. If a page has “New Document” items defined, at least one of the most frequently used items must be promoted to the New group
    - 3.1.2. If a page has application actions defined, at least one of the most frequently used actions must be promoted to the Process group or a custom category.
    - 3.1.3. If a page has related information items defined, at least one of the most frequently used items must be promoted to the Process group or a custom category.
  - 3.2. (Windows client only) At least one action in each group must be set to prefer large icon size (the *PromotedIsBig* property.)
  - 3.3. The New and New Document groups must contain only actions that open up a new window from which the user can create a new entity.
  - 3.4. No promoted category must contain more than 9 items, not counting items placed inside dropdown menus.
- 4. List & Worksheet Pages added or modified by the Solution
  - 4.1. (Tablet client and Phone client only) Actions that act in relation to a specific record must not appear in the page’s action pane. To ensure this, the action property ‘Scope’ must be set to ‘Repeater’.
- 5. Card, Document, and ListPlus pages added or modified by the solution
  - 5.1. The Document page type must be used only for entities that have a transactional or statutory aspect
    - 5.1.1. Documents must have a single “Lines” grid.
  - 5.2. The Card page type must be used only for pages that display master, reference, or setup data
    - 5.2.1. Card pages may have sections (FastTabs) with a grid to represent a repeating field. To avoid confusion with the lines on Document pages, such section must be named to reflect the data it shows, and not be titled “Lines”.
  - 5.3. The ListPlus page type must not be used for entities for which the Card or Document page type are designed
    - 5.3.1. A ListPlus page may—as needed—contain any number of sections with fields or grids
  - 5.4. All top-level sections on a page (FastTabs) must show a title. Field groups *within* a section need not be titled.
  - 5.5. A page section with *fields* (and not a grid) must by default show a maximum of 16 fields.
    - 5.5.1. (Windows and web client only) A FastTab with fields must have between 1 and 5 fields displayed as Summary Values in the FastTab’s header. This shows up when the FastTab is collapsed.
    - 5.5.2. (Windows and web client only) Within a FastTab, fields that are rarely needed by the user must be marked ‘Additional’ and so made available via the “Show more fields” option.
  - 5.6. (Windows client only) Card and Document pages must not show Limit Totals To by default.
  - 5.7. Pages of type Card, Document, and ListPlus must not directly contain a Repeater group, but may contain a subpage that in turn has a Repeater group.

Provide screenshots of the following pages in Portable Network Graphic (PNG) format.

Role Centers for up to five new or revised key user profiles in the solution.

- (Windows client only) Make sure that all views, which are shown as indented links under List Places in the navigation pane, are expanded.

Provide screenshots of the following pages in Portable Network Graphic (PNG) format, taken with either the Business Central web client, or with the Dynamics NAV client (for Windows) connected to Business Central:

Role Centers for up to five new or revised key user profiles in the solution.

- (Windows client only) Make sure that all views, which are shown as indented links under List Places in the navigation pane, are expanded.
- Take each screenshot in a maximized window at a 1280 × 1024 screen resolution.

Most frequently used (two to three) unique lists in each of the Role Centers for the key user profiles.

- (Browser and Desktop app only) The filter pane must be visible, revealing the set of views applicable to that list.
- Take each screenshot in a maximized window at a 1280 × 1024 screen resolution.

Task Page (card or document page) that opens when you drill down to a record in each of the most frequently used lists.

- Take each screenshot in a maximized window at a 1280 × 1024 screen resolution.
- FastTabs and the FactBox pane must be expanded.
- (Windows client only) The ribbon must be expanded.
- (Web client only) The action bar must be pinned.
- The requirement is for a single screenshot for the list places and task pages, no matter how many RoleCenters they are used in.

Justification explaining why the solution does not meet specific user experience requirements.

#### TEST METHODOLOGY

To verify this requirement, the test vendor will use the screenshots that are provided by the ISV as part of the [Documentation Requirements](#). Role Centers and pages that are designed for tablets must be documented using screenshots from a tablet.

The test vendor will confirm that the page screenshots of Role Centers, list places, and task pages follow the full set of applicable requirements.

#### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not follow user experience requirements, then it will fail the test.

### 3.2 The ISV solution that restricts the functionality of Business Central on-premises must document the restriction.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

#### *SUMMARY AND INTENT*

End users expect that the underlying Business Central on-premises solution is fully functional. In addition, other ISVs will expect that a Business Central on-premises environment will be fully functional.

#### *RESOURCES*

None.

#### *HOW TO COMPLY*

If your solution limits or breaks existing Business Central on-premises functionality or cannot coexist with Business Central on-premises functionality, then you must include documentation that explains the conflict and states that the Business Central on-premises feature or function will not be available after the user installs your solution. For example, if a reporting solution is designed for customers who do not use inventory and will not work for a customer who uses standard inventory functionality, then you must explain this limitation.

#### *TEST METHODOLOGY*

The test vendor will confirm that you have provided the required documentation.

#### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution limits or breaks existing Microsoft Dynamics Business Central on-premises functionality and does not document the limitation, then it will fail the test.

## TRANSLATION AND LOCALIZATION REQUIREMENT

Your solution must comply with the following requirement:

- [Requirement 4.1: The ISV solution must separate strings from source code.](#)

4.1 The ISV solution must separate strings from source code.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

ISV solutions must be able to be localized in the same markets that the underlying Business Central on-premises product serves. Therefore, your solution must be globalized and follow localization best practices.

### RESOURCES

For more information, see the following websites:

- [Multilanguage Development in Dynamics NAV](#)
- [Globalization](#)

### HOW TO COMPLY

Business Central on-premises includes multilanguage features. Therefore, a Business Central on-premises user can switch languages within the application. To provide a consistent user experience, your solution must have multilanguage properties set on all captions and user interface fields. All text constants must be multilanguage enabled unless they refer to computer-to-computer communication, such as building XML documents or integrating with other applications. Text constants, objects, fields and menu items that have hard coded text constants should be removed.

Localizations must translate even the standard NAV UI elements, in addition to the ISV solution functionality

Even if you are not localizing your application into other languages, you must consider how your application will operate with other language configurations. For example, if you use English (United States) names and locations for standard system directories, then your solution may not install or run correctly.

Your solution must be shipped with English language strings in addition to the target language or languages for your solution. If it is clearly documented in your sales and marketing materials that your solution only targets one language or country/region, then you may choose to ship it with language strings for that language only.

You must provide the testing vendor with a license that allows the code to be reviewed and exported to a text file.

### TEST METHODOLOGY

To verify this requirement, the test vendor will follow these steps:

1. Install the language module for the targeted language.
2. Check that the pages and error messages run in the selected language.
  - a. On the Application menu, , choose Select Language.
  - b. Select a language from the list.

### CRITERIA FOR PASSING

This requirement is mandatory unless it is clearly documented that your solution targets only one language or country/region. If the solution does not meet the multilanguage requirements, then it will fail the test.



## TECHNOLOGY CONFIGURATION AND PLATFORM REQUIREMENT

Your solution must meet the following requirement:

- [Requirement 5.1: The ISV solution must support the infrastructure that Business Central on-premises supports.](#)

5.1 The ISV solution must support the infrastructure that Business Central on-premises supports.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

Your solution must run on the specified infrastructure (browser, database, operating system, and other software) versions on which the latest version of Business Central on-premises runs. Additionally, your solution must run on the latest service pack version of Business Central on-premises if it has been available for the local version of Business Central on-premises that is being tested for more than two months.

### *RESOURCES*

For more information, see the [Business Central System Requirements](#) on the Docs.microsoft.com site. This document lists the versions of various infrastructure components that are supported by Business Central on-premises.

### *HOW TO COMPLY*

Test your solution on the infrastructure that Business Central on-premises supports. In your user guide, include a system requirements section that identifies the supported operating system or systems, database, browser, and other environment requirements. Specify the required versions for all required infrastructure software. If your in-product solution will always run in Business Central on-premises on whatever infrastructure Business Central on-premises runs, then state this.

### *TEST METHODOLOGY*

The test vendor will perform a qualitative review to determine whether your solution runs on the specified infrastructure (browser, database, operating system, and other software). The vendor will review the user guide and compare the listed requirements to the latest list of supported components for Business Central on-premises.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not run on the prescribed infrastructure, then it will fail the test.

## INSTALLATION AND SETUP REQUIREMENTS AND RECOMMENDATIONS

Your application must meet the following requirements:

- [Requirement 6.1: The ISV solution installation procedure must be compatible with Business Central on-premises.](#)
- [Requirement 6.2: The ISV solution must correctly register DLLs.](#)
- [Requirement 6.3: The ISV solution must correctly register Windows client control add-ins In Business Central on-premises and deploy add-in assemblies to client machines.](#)
- [Requirement 6.4: The ISV solution must correctly register control add-ins in Business Central on-premises and import control add-in resource.](#)
- [Requirement 6.5: After the ISV solution is installed, the Business Central on-premises database must compile without errors.](#)
- [Requirement 6.6: The ISV must document the required versions and service packs of all dependent software programs, including Business Central on-premises.](#)
- [Requirement 6.7: The ISV must document the Business Central on-premises license that is required for their solution installation.](#)
- [Requirement 6.8: The ISV must document uninstallation procedures.](#)
- [Requirement 6.9: The ISV solution must include installable demonstration data.](#)
- [Requirement 6.10: Business Central on-premises must start without errors after the ISV solution is installed.](#)
- [Requirement 6.11: The ISV solution is recommended to use the RapidStart Services to increase setup speed.](#)
- [Requirement 6.12: The ISV solution must correctly deploy .NET Framework add-in components to computers running Business Central on-premises Server and Business Central on-premises client.](#)

6.1 The ISV solution installation procedure must be compatible with Business Central on-premises.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

All ISV-certified solutions must have complete application installation instructions, and the instructions must be clear and easy to follow. The installation instructions must include procedures for installing and configuring Business Central on-premises so that it functions with the ISV solution. You do not need to duplicate Business Central on-premises installation procedures, but you may add to them by explaining any special steps that are required for your solution. The instructions can be in a plain text file or part of the standard user documentation. They must list all necessary steps, including working with the FOB import, system settings, and instructions for using any automated installation executable files.

### RESOURCES

None.

### HOW TO COMPLY

You must provide instructions for installing your solution. The installed components will be the components that will be tested.

Add-on solutions that are intended to be installed on top of other solutions must be shipped and installed with .fob files. Complete solutions that are not intended to be installed on top of another solution can be installed with .fob files or in another way, such as installing a custom database or restoring from database backup files.

You must provide detailed instructions on how to perform the installation. These should be written in a format that allows a VAR consultant to install the solution for a customer with minimal effort and without consulting technical support or contacting you.

---

Note: This requirement does not apply to the installation of dynamic-link library (DLL) files.

Because of licensing restrictions of the Business Central on-premises installation that is included in the ISV solution, this test is designed for situations where the ISV solution is the only solution that interoperates with a new Business Central on-premises database.

---

You may need to provide a .txt file also to allow VARs to merge the solution into an existing database with customizations. You should note the specific country/region database for which the solution was written for and document necessary service packs and hotfixes.

#### *TEST METHODOLOGY*

The test vendor will use one of the following methods to confirm that the ISV has provided a complete list of resources.

To install with a .fob file:

The test vendor will confirm that the ISV has provided a complete list of all resources that are added to Business Central on-premises. This list will be used to verify the removal of the product.

The test vendor will follow each step in the installation instructions in the order presented. The vendor should be able to complete the installation without consulting support personal or contacting the ISV.

To verify the .fob file requirements, the test vendor will follow these steps:

1. Open Business Central on-premises, and then connect to the database.
2. Install the Business Central on-premises license file.
3. To open Object Designer, on the Tools menu, choose Object Designer.
4. To import the .fob file, on the File menu, choose Import.
5. Locate the import file, and then choose Open.
6. The .fob file includes modified objects. When prompted, open the import worksheet.
7. Verify that no objects are to be skipped. Objects are skipped if the version of the object in the database is later than the one in the .fob file.
8. Choose the OK button to import the .fob file. The file should be imported without producing any errors.

To install with another method:

The test vendor will follow the installation instructions that are provided by the ISV. In this case, the version consistency is tested by [Requirement 1.4](#).

#### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not install correctly, then it will fail the test. If the solution produces FOB import errors, then it will fail the test.

## 6.2 The ISV solution must correctly register DLLs.

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

If your solution installs any DLLs, then you must provide a setup program.

### *RESOURCES*

None.

### *HOW TO COMPLY*

Check the registry to ensure that your setup program functions correctly. Document the correct registry settings and include this information with your solution when you submit it for testing.

### *TEST METHODOLOGY*

During the in-lab review, the test vendor will install your application and review the registry to verify that the setup program registers all DLLs.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not correctly register the necessary, then it will fail the test.

## 6.3 The ISV solution must correctly register Windows client control add-ins in Business Central on-premises and deploy add-in assemblies to client machines.

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

Client control add-ins are used to extend the Business Central on-premises Windows client with custom functionality. A Windows client control add-in is a custom control or visual element for displaying and modifying data on Windows client pages.

Windows client control add-ins are delivered as .NET Framework–based assemblies, which are .dll files. A single assembly can contain one or more control add-ins.

For the computer running the Business Central on-premises Windows client:

The ISV solution must provide an external install package that copies one or more assemblies to the Add-ins directory.

On the computer running the Business Central on-premises Windows client, copy the assemblies that contain the control add-ins to the Add-ins directory of the client installation or any subdirectory of that the installation. The default path to this folder is:

C:\Program Files (x86)\Microsoft Dynamics 365 Business Central\130\RoleTailored Client\Add-ins You can also place assemblies in a subfolder of the Add-ins folder. This can be useful when you have multiple assemblies and dependencies.

In Business Central on-premises:

Software Solution Test Guidelines for Microsoft Dynamics Business Central on-premises

Register the control add-ins that are found in the assemblies in page 9820 Control Add-ins.

#### RESOURCES

- For more information about control add-ins, see [Extending Any Dynamics NAV Client Using Control Add-ins](#) on the Docs.microsoft.com site.
- For more information about control add-in registration, see [Registering the Control Add-in in Dynamics NAV](#) on the Docs.microsoft.com site.

#### HOW TO COMPLY

A Windows client control add-in must be registered in table 2000000069, Client Add-in, with at least its name and the public key token of its signature. Optionally, the file version of the Windows client control add-in assembly and a description text can be added.

The ISV solution must provide an external install package that installs one or more assemblies to the Add-ins directory or a subdirectory of that the Add-ins directory.

#### TEST METHODOLOGY

The test vendor will verify that the Windows client control add-ins that are listed in the documentation have been correctly deployed to the computers running the Business Central on-premises Windows client, and that they are correctly registered in Business Central on-premises.

In Business Central on-premises:

1. In the Windows client, in the Search box, enter Control Add-ins, and then choose the related link.
2. Verify that all the control add-ins from the list have been included in the Control Add-ins window and the underlying table.

For the computer running the client:

1. Open the Add-ins directory at C:\Program Files (x86)\Microsoft Dynamics 365 Business Central\130\RoleTailored Client\Add-ins.
2. Verify that all Windows client control add-ins from the list have been included in this folder and all listed assemblies are present in the directory or subdirectories.

#### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not correctly register and deploy necessary Windows client control add-in components, then it will fail the test.

6.4 The ISV solution must correctly register control add-ins in Business Central on-premises and import control add-in resource.

Type	Test method	Technology	Solution category		
Required	In-lab review	External	Simple	Complex	Hosted
			✓	✓	✓

#### SUMMARY AND INTENT

Client control add-ins are used to extend the Business Central on-premises Windows and Web client with custom functionality. A client control add-in is a custom control or visual element for displaying and modifying data on Windows and Web client pages. The same client control add-in will be used on both Windows and Web client pages.

Client control add-ins are delivered as .ZIP packages containing a manifest and optionally JavaScript, style sheets, and images. A single .ZIP package can contain only one client control add-in.

In Business Central on-premises:

Register the client control add-in in page 9820 Control Add-ins and import its resource (.zip file).

#### RESOURCES

For more information about client control add-ins, see [Extending Any Dynamics NAV Client Using Control Add-ins](#) on the Docs.microsoft.com site.

#### HOW TO COMPLY

A client control add-in must be registered in table 2000000069, Client Add-in, with at least its name, the public key token of its signature, and its resource (.zip file). Optionally, the file version of the client control add-in assembly and a description text can be added.

The client control add-in must work as expected when used from the Business Central on-premises Windows client as well as from the Business Central browser client on all browsers supported. For more information, see [System Requirements](#) in the Business Central developer and ITpro docs.

#### TEST METHODOLOGY

The test vendor will verify that the client control add-ins that are listed in the documentation have been properly registered in Business Central on-premises and its resource (.zip file) has been imported.

In Business Central on-premises:

1. In the Windows client, in the Search box, enter Control Add-ins, and then choose the related link.
2. Verify that all the client control add-ins from the list have been included in the Control Add-ins window and the underlying table.
3. Verify that all the client control add-ins from the list have a valid resource by exporting the client control add-in resource. Save the resource to a file on the hard drive and examine the file from Windows Explorer. The resource must be a valid .zip file.
4. Extract the .zip file and verify that it contains one file and the following three optional subfolders:
  - manifest.xml (mandatory)
  - Script\\*.js (optional)
  - StyleSheet\\*.css (optional) Image\\*.png (optional)Files in the three subfolders (Script, StyleSheet, Image) are optional and the subfolders can be omitted when empty.
5. If a Script folder is present in the .zip file, verify that it contains only .js files (JavaScript), and that the .js files have been minified. For more information, see [minification](#).
6. If a StyleSheet folder is present in the .zip file, verify that it contains only .css files (stylesheet), and that the .css files have been minified. For more information, see [minification](#).
7. If an Image folder is present in the .zip file, verify that it contains only .png files.
8. Verify that all files found in the Script, StyleSheet, and Image subfolders in the .zip file are referenced from the <Resources> section of the manifest.xml file.

#### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not correctly register client control add-in and import a valid client control add-in resource, then it will fail the test.

6.5 After the ISV solution is installed, the Business Central on-premises database must compile without errors.

Type	Test method	Technology	Solution category		
Required	In-lab review	C/SIDE	Simple	Complex	Hosted
			✓	✓	✓

#### *SUMMARY AND INTENT*

After your ISV solution is installed, the Business Central on-premises database must compile and function correctly.

#### *RESOURCES*

None.

#### *HOW TO COMPLY*

You should install your solution and compile the Business Central on-premises database to verify the integrity of the newly installed code.

---

**Note:** If your solution registers external DLLs, then these should be installed on the computer before you install the solution.

---

#### *TEST METHODOLOGY*

To verify this requirement, the test vendor will follow these steps:

1. Open Object Designer, and then choose the All Objects button.
2. When all objects are displayed, select all Business Central on-premises objects, including those that were created by the ISV.
3. Compile the database. On the Tools menu, choose Compile. The compilation process should take 15 to 30 minutes.
4. The compilation process should report no errors and return you to Object Designer. If errors are reported, then on the View menu, choose Marked Only. The Error List window also contains all errors and warnings that occur during compilation. If any errors or warnings occur during compilation, then the Error List window opens automatically. To manually open the window, on the Tools menu, choose Error List.
5. Note the objects that are reported as errors. Report the compilation errors to the ISV before continuing.

---

**Note:** The objects that compiled before the solution was imported must also be able to compile after the import.

It is acceptable that the following standard Business Central on-premises objects will not compile when installed on a clean system:

Tables: 370, 5302

Codeunits: 424, 5054, 5064, 5300, 5301, 5303-5312, 7152, 7700, 8610, 8611.

---

#### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution causes the database to produce errors after the solution is installed, then it will fail the test unless an acceptable written explanation is provided for why this happens.

6.6 The ISV must document the required versions and service packs of all dependent software programs, including Business Central on-premises.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

*SUMMARY AND INTENT*

Your solution may have software dependencies. Additionally, Business Central on-premises requires specific software and service pack versions to be installed. You must document these requirements and include the documentation in your test submission.

*RESOURCES*

None.

*HOW TO COMPLY*

Provide the test vendor with a list of the software, including version numbers and service packs of Business Central on-premises that your solution requires.

*TEST METHODOLOGY*

The test vendor will review the documentation to verify that the required software list is provided.

*CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not include documentation for the software and service pack requirements, then it will fail the test.

6.7 The ISV must document the Business Central on-premises license that is required for their solution installation.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

*SUMMARY AND INTENT*

If your solution requires a specific Business Central on-premises license configuration, such as the Dynamics 365 Premium, you must document the license requirements. Also, if your solution is based on the Team Members license, you must specify this and the specific scenarios that the Team Members license will be used for.

*RESOURCES*

See the [Dynamics 365 Business Central on-premises Licensing Guide](#) (requires PartnerSource access)

*HOW TO COMPLY*

Provide the test vendor with information about which Business Central on-premises license configuration that your solution requires.

### TEST METHODOLOGY

The test vendor will review the documentation to verify that the required license information is provided. If you have specified Team Members scenarios in Appendix B, the test vendor will test those scenarios with a Team Members license.

### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not include information on the required Business Central on-premises license, then it will fail the test.

## 6.8 The ISV must document the uninstallation procedures.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

Customers must be able to uninstall an ISV solution. If your solution cannot be removed, then you must state this in your documentation.

This applies to components that are external to Business Central on-premises. For the part of the ISV solution that is implemented in Business Central on-premises objects, these changes must be identifiable through versioning. For more information, see [Requirement 1.4: The ISV solution must follow standard Business Central on-premises version conventions and provide code comments for changed Business Central on-premises objects.](#)

### RESOURCES

None.

### HOW TO COMPLY

Provide a complete list of all resources that your solution adds to Business Central on-premises. You must also provide complete instructions for uninstalling your solution, including removing any imported code, DLLs and registry entries. If it is not possible to uninstall your solution, then you must state this in the documentation. After the solution is uninstalled from the test system, Business Central on-premises may not be functional.

### TEST METHODOLOGY

The test vendor will confirm that the ISV has provided a complete list of all resources that are added to Business Central on-premises. This list will be used to verify the removal of the solution.

If uninstallation is possible, then the test vendor will follow each step in the uninstallation instructions in the order that they are presented. The test vendor must be able to remove the solution without consulting the ISV. After uninstalling the solution, Business Central on-premises may not be functional.

The test vendor will then review the list of components that the ISV solution installed to verify that the entire ISV solution has been removed.

---

Note: The following user data must not be removed:

- *Customer data*, such as the database, configuration files, and other files that are placed in the installation folder after installing the product.
- *Prerequisites*, such as external components that are required by the solution to work.

### CRITERIA FOR PASSING

This requirement is mandatory. If the solution can be uninstalled and does not uninstall completely, then it will fail the test unless you have a valid reason for not supporting uninstallation.



## 6.9 The ISV solution must include installable demonstration data.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

Demonstration data is useful for many purposes, such as sales demonstrations, training, and application testing. Therefore, you must deliver at least one demonstration company with your solution. Microsoft recognizes that some datacenters do not allow installing demonstration data on production servers. You can deliver demonstration data as part of the main installation or as a separate installation, such as in a VHD image. You must provide instructions that describe how to add the demonstration data to demonstrate the entire solution and all components.

### *RESOURCES*

None.

### *HOW TO COMPLY*

The demonstration data must populate new tables or fields in your solution. You can provide data in the following ways:

- Supply XMLports so that users can import the demonstration data. You should include the XMLports in .fob file format with the data files. You can include the XMLports with the main application objects or as a separate .fob file.
- Provide a Business Central on-premises object, such as a codeunit that populates the demonstration data for the ISV solution when it is run.

You must include complete instructions for adding the data to Business Central on-premises.

### *TEST METHODOLOGY*

To verify this requirement, the test vendor will use the following procedure:

1. Verify that the ISV provides XMLports or codeunits with the solution, and then import the objects.  
If the objects are delivered in a .fob file that also includes tables, you must synchronize table schemas during the import. This makes the subsequent test of data consistency redundant.
2. Compile the objects. Follow the instructions supplied by the ISV to install the demonstration data.

To verify that table changes are consistent with the demonstration data, the test vendor will synchronize the table schema after your solution is installed:

3. Open the database in the development environment.
4. On the Tools menu, point to Synch. Schema for All Tables, and then choose With Validation.  
This synchronizes the database against the Business Central on-premises Server in the current installation. If there are no errors, the test vendor will then open the ISV solution in the Business Central on-premises Windows client or the Business Central on-premises Web client and verify that the demonstration data is available.

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not include demonstration data, then it will fail the test. If the database and demonstration data are not consistent, then the solution will fail the test.

## 6.10 Business Central on-premises must start without errors after the ISV solution is installed.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

This requirement is designed to eliminate poor end-user experiences that result from new installations that produce errors the first time that Business Central on-premises with an installed ISV solution is started. This requirement was implemented in response to specific feedback that some ISV solutions result in errors that require manual intervention when starting Business Central on-premises with the installed solution for the first time.

### *RESOURCES*

None.

### *HOW TO COMPLY*

Your installation guidance or setup must be sufficient to avoid these errors.

### *TEST METHODOLOGY*

After installation, inspect for a problem-free solution launch and perform some typical operations as defined in the Business Central on-premises Consistency Verification Test. For more information, see [Appendix B](#).

### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution causes the system to stop responding or if other serious errors are reported, then it will fail the test.

## 6.11 The ISV solution is recommended to use the RapidStart Services to increase setup speed.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### *SUMMARY AND INTENT*

RapidStart Services is a tool designed to shorten deployment times, improve quality of implementation, and enable productivity by automating and simplifying recurring tasks.

### *RESOURCES*

See [Setting Up a Company With RapidStart Services](#) on the Docs.microsoft.com site.

### *HOW TO COMPLY*

For all solutions, the RapidStart Usage Questionnaires must be completed. See [Appendix C](#).

Additionally, for solutions that only use RapidStart Services, ISVs should follow the instructions in the [Setting Up a Company With RapidStart Services](#) on the Docs.microsoft.com site.

Pay particular attention to the following:

- Setup questionnaire updates: To update an existing setup questionnaire, create a new question line that contains a field from the related setup table that is not included in the present questionnaire.

If the vertical solution includes setup tables that are not included in Business Central on-premises, then create a new questionnaire header for each table and link the header to each database table.

Use the Update Questions function to create questionnaire lines. The information will appear in the lines with a question number, the question (which is the same as the field name followed by a question mark), and the valid options for the setup field.

- Changes to core tables: If you make changes to existing core Business Central on-premises tables, then implement the changes throughout the entire hierarchy of posting groups and in the master data templates.

You can add new ISV-related tables and data.

- Changes to the master data: If your solution contains information to be added to the five master data types that are covered by the master data templates, or it requires a new master data template, perform the following steps.
  1. To add the information, add a new line to the existing master data template. Selecting the Mandatory field is for informational purposes only, and the data is not validated.
  2. You can create a new master data template that is related to the master data table and add the necessary fields and possible default values.

If the new master data template is to be used in the daily operations from a master data record, then you may need to add a function to the relevant page.

Data templates are useful if you need to transfer data from another system, such as when doing data migration from the customer's legacy system.

- Changes to ISV-specific data: When you add ISV-specific data, you can export the contents from the Config. Packages window (page 8615) to an ISV-specific .xml file. You should include any additional ISV-related tables in the Configuration Worksheet window. If you want to make it possible to create a lookup to the data tables from the Configuration Worksheet window, then enter the page number in the Page ID field.

Create one .xml file per industry segment, and then use the .xml file format. We recommend that you do not use the Excel format. The new .xml file can be an update of the core .xml files or a new file.

Update core files in the Company Setting\ENU folder, and then update the .xml configuration file manually if there are changes to the data links

The new .xml file is placed in the Company Settings\Culture folders. For example, you can put a German version in the Company Settings\DEU folder.

#### TEST METHODOLOGY

For all solutions, the test vendor will validate that the RapidStart Usage Questionnaires in [Appendix C](#) have been completed.

Additionally, for solutions that only use RapidStart Services, the test vendor will:

1. Create a new company, and then import the configuration package provided with the solution.
2. Open the Configuration Worksheet window (page 8615), and then validate that the new company contains the following information:
  - Questionnaires
  - Setup data
  - Master data template header and lines

3. Apply the package – no errors should occur during this process.

The test vendor will also verify that no errors are reported on the page.

The vendor will use the list of all modified or new XML company types that the ISV provides and repeat this process.

#### CRITERIA FOR PASSING

This requirement is mandatory. If the questionnaires in Appendix C have not been completed, then the solution will fail the test.

6.12 The ISV solution must correctly deploy .NET Framework add-in components to computers running Business Central on-premises Server and Business Central on-premises client.

Type	Test method	Technology	Solution category		
			Simple	Complex	Hosted
Required	In-lab review	External	✓	✓	✓

*SUMMARY AND INTENT*

You can use the .NET Framework to author add-ins as assemblies that extend your application with .NET Framework features and can be called from application code. These assemblies can be set up to target Business Central on-premises Server, the development environment, and the Business Central on-premises client. When you author your solution deployment, you must deploy assemblies to the correct computers depending on where the code must be run. Deployment to the development platform is optional and is only required if the assembly is part of a development toolkit that is provided to end users. The add-ins can be automatically deployed directly from the Business Central on-premises database to the Business Central on-premises Server instance or client as required if you import the add-ins into the database.

*RESOURCES*

See [Extending Microsoft Dynamics NAV Using Microsoft .NET Framework Interoperability](#) on the Docs.microsoft.com site.

*HOW TO COMPLY*

Ensure that you only deploy components to the computer running Business Central on-premises Server that target the server and deploy components to the computer running Business Central on-premises that target the client. Document the external components and include this information with your solution when you submit it for testing. Create a compressed file (.zip file) with your add-in assemblies and import them into the database using the Control Add-Ins window.

*TEST METHODOLOGY*

The test vendor will install your solution on a two-computer setup and ensure that the assemblies are deployed correctly to the computers running Business Central on-premises Server and Business Central on-premises. The assemblies must be available in the Control Add-Ins window and stored in the database.

*CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not correctly deploy necessary assemblies and components, then it will fail the test.

## BACKUP AND RESTORE REQUIREMENT

Your application must meet the following requirement:

- [Requirement 7.1: The ISV must include procedures to back up and restore both the ISV solution and the data if the standard Business Central on-premises backup is insufficient.](#)

7.1 The ISV must include procedures to back up and restore the ISV solution and data if the standard Business Central on-premises backup process is insufficient.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

### SUMMARY AND INTENT

A customer or partner must be able to back up and restore your solution and all associated data. Therefore, if your solution requires any special backup or restore procedures, then you must include documentation that describes what should be backed up, how to back it up, and how to restore data.

Backup procedures should also include any solution data that is stored outside Business Central on-premises.

### RESOURCES

None.

### HOW TO COMPLY

If your solution requires the user to perform any special steps to backup or restore data that is not a part of a standard Business Central on-premises backup process, then you must prepare a document that describes the backup process.

Include the following information:

- What to back up
- How to back it up
- How to restore the data, including data that is stored outside Business Central on-premises

Solutions that store data outside the Business Central on-premises database must have additional documentation.

### TEST METHODOLOGY

The test vendor will verify that you have included appropriate backup and restore procedures. The test vendor will perform the backup and restore processes to make sure that it functions correctly. The test vendor may use your demonstration data to perform this test.

### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not include appropriate backup and restore procedures, then it will fail the test.

## UPGRADE AND MAINTENANCE REQUIREMENTS

Your solution must meet the following requirements:

- [Requirement 8.1: The ISV must provide database upgrade scripts.](#)
- [Requirement 8.2: The ISV must use file versioning for DLLs.](#)
- [Requirement 8.3: The ISV must use file versioning, company, and product metadata for .NET Framework add-ins components.](#)

### 8.1 The ISV must provide database upgrade scripts.

Type	Test method	Technology	Solution category		
Required*	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

*\*Required if the ISV solution has been updated.*

#### *SUMMARY AND INTENT*

This requirement ensures that upgrades are easier for partners by providing scripts that support database upgrades.

#### *RESOURCES*

None.

#### *HOW TO COMPLY*

Prepare and document your upgrade scripts. Your documentation must list the names of the upgrade scripts and the tables that each script affects. You should provide more in-depth documentation, but it is not required.

#### *TEST METHODOLOGY*

The test vendor will verify that you have included the required upgrade script documentation, which lists the scripts and the affected tables.

#### *CRITERIA FOR PASSING*

This requirement is mandatory. If the solution does not include upgrade scripts and documentation, then it will fail the test.

### 8.2 The ISV must use file versioning for.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

#### *SUMMARY AND INTENT*

All executable files, such as DLLs, must have versioning metadata that is associated with them. Installation programs use this metadata to confirm that correct versions are in place before applying an upgrade, service pack, or hotfix. Without this versioning information, an installation program could potentially corrupt the system by applying changes that cannot be synchronized with the files that are currently installed. Additionally, if a shared component fails, then correct

file version information helps a customer identify the associated solution and file producer. The file's producer is the only entity that can regress the file. Therefore, the metadata must also include the company name.

#### RESOURCES

None.

#### HOW TO COMPLY

Examine the file information for each DLL to verify that it includes the product name, company name, and file version number.

#### TEST METHODOLOGY

The test vendor will review submitted code to determine if files contain metadata with the following elements:

- Product name
- Company name
- File version number

#### CRITERIA FOR PASSING

This requirement is mandatory. If the solution does not use file versioning, then it will fail the test.

### 8.3 The ISV must use file versioning, company, and product metadata for .NET Framework add-in components.

Type	Test method	Technology	Solution category		
Required	In-lab review	All	Simple	Complex	Hosted
			✓	✓	✓

#### SUMMARY AND INTENT

All assemblies must have file versioning metadata. Installation programs use this metadata to confirm that correct versions are installed before applying an upgrade, service pack, or hotfix. Without this information, an installation program can potentially cause data corruption by applying changes that cannot be synchronized with the files that are currently installed.

Assemblies must also include the product name and company name in the metadata. If a shared component fails, then correct file version information can help a customer identify the associated solution and file producer. The file producer can provide support.

#### RESOURCES

None.

#### HOW TO COMPLY

Examine the file information for each assembly to verify that it includes the product name, company name, and file version number.

#### TEST METHODOLOGY

The test vendor will review submitted code to determine if files contain metadata with the following elements:

- Product name
- Company name
- File version number

#### CRITERIA FOR PASSING

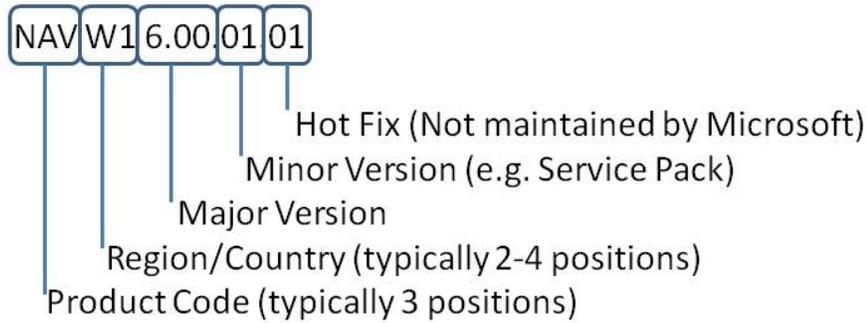
This requirement is mandatory. If the solution does not use file versioning and include the product name and company name, then it will fail the test.



# APPENDIX A: STANDARD BUSINESS CENTRAL ON-PREMISES VERSION CONVENTIONS

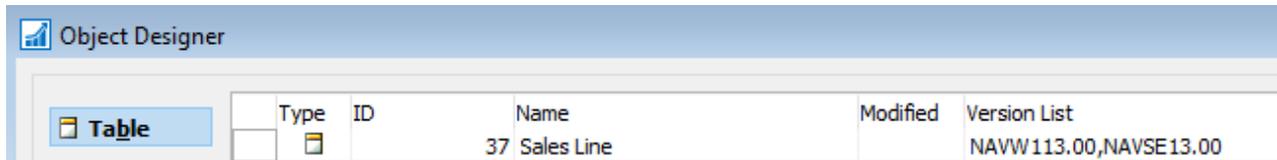
This section describes the object version number syntax that is used when labelling the Business Central on-premises base product and all products that are used with the Business Central on-premises base product.

The following illustration demonstrates the Version List labelling of all objects that are provided in Business Central on-premises.



Note that labelling hotfixes is a recommended approach when applying hotfixes in an installation and does not exist in objects that are provided by Microsoft.

When an existing object is modified, such as when a standard object is modified by localization, the labelling of the modification is added to the Version List and is separated by a comma. The following illustration demonstrates the labelling for a standard object that has been modified by local functionality changes:



The following information is contained in the Version List column:

- The object is affected by W1 functionality and local functionality, where the object is based upon a W1 object and modified with local functionality.
- The W1 object was last changed or the object was created in connection with Business Central on-premises W1 version 13.00, Business Central on-premises RTM.
- The local functionality that is contained in the object was last changed or the local functionality was created in connection with Microsoft Dynamics NAV SE 13.00.

Objects that are modified multiple times during the localization process are also tagged with one reference for each modification, and the reference always refers to when the object was changed or created.

## PARTNER FUNCTIONALITY OBJECTS

When you modify objects that are provided by Business Central on-premises, you must add a comma-separated reference to the partner version list for local or cross-localization modifications.

We recommend that you do not use Business Central on-premises and other product codes that are used by Business Central on-premises. Partners can use any other conventions for versioning of their objects. We recommend aligning your versioning conventions with the Microsoft versioning conventions for major and minor version and hotfix references. There are no restrictions to the number of characters that can be used to reference the Product Code or Region/Country values in the Version List.

## APPENDIX B: BUSINESS CENTRAL ON-PREMISES CONSISTENCY VERIFICATION TEST

Company:

Solution:

Version:

Prepared by:

Date Prepared:

### 1. Identify the intended purpose of the product.

Specify what fundamental service that the product is supposed to provide. To the extent possible, define the audience for the product. Write a paragraph that briefly explains the purpose of the product and describes its intended audience.

Example:

*Test Solution* is a solution for managing data warehouse that enables the user to define the data warehouse strategy in a multifacility and multiuser environment.

Describe the product purpose:

2. Identify the most representative User Profiles for your solution.

List the User Profiles that you are designing your product for. For each User Profile please include the Role Center ID and a description of the User Profile's work. Also indicate with a Yes or No if this User Profile performs transactions such as processing documents, filling journals or maintaining reference data.

Example:

<i>User Profile</i>	<i>Role Center ID</i>	<i>Description</i>	<i>Transactions</i>
<i>Project Manager</i>	<i>9051</i>	<i>A Project Manager will typically be responsible for Project Initiation, Scheduling, Resource Management and Project Budget management.</i>	

3. Identify the most representative primary functions for each User Profile of your solution

Term	Definition	Notes
Primary function	Main usage of the product — the function that is so important that, in the estimation of a typical user, its inoperability or impairment would make the product unfit for its purpose.	<p>A function is <i>primary</i> if you can associate it with the purpose of the product and it is essential to that purpose.</p> <p>Primary functions define the product. For example, the function of adding text to a document in Microsoft Office Word is so important that the product would be useless without it. Groups of functions that are taken together could be a primary function. For example, although no single function on the drawing toolbar of Word is primary, the complete toolbar might be primary. If the toolbar is primary, most functions on that toolbar should be operable for the product to pass the test.</p>

Examples of primary functions:

- Manage cross-docking operations.
- Manage stock environment.
- Manage IT interoperability with a fast carrier company.

List all primary functions:

4. Identify the most representative contributing functions for each role.

Term	Definition	Notes
Contributing function	Any function that contributes to the utility of the product but is not a primary function.	Although contributing functions are not primary, their inoperability could be a reason for failure. For example, users may be able to do useful things with a product, even if it has an Undo function that never works, but most users will find that unacceptable. Such a failure would violate fundamental expectations about how products should work.

*Example of a contributing function:*

- Generate a 3-D report.

List all contributing functions:

5. Specify potential instabilities and challenging data.

1. List five to 10 functions or groups of functions (preferably primary functions) for focused instability testing.
2. Specify challenging data for each selected function. Think of large, complex, or otherwise challenging input.

Examples:

- Functions that interoperate with other products (for example, object linking and embedding, file conversion).
- Functions that interoperate with other products (for example, object linking and embedding, file conversion).
- Functions providing data through Web Part Connections.
- Functions that make intensive use of memory.
- Functions that interact extensively with the operating system.
- Functions of unusual complexity.
- Functions that change operating parameters (for example, preference settings).
- Functions that manipulate operating system configuration.

## 6. Design and record a consistency verification test.

### Prerequisites:

List any action that must be performed before the consistency verification test can be executed.

### Examples:

- Install Microsoft SQL Server.
- Import XML files with end-user configuration for key User Profiles
- Use radio frequency identification (RFID) to identify hardware. Required Information:

List any information that a user must know to perform the consistency verification test.

### Examples:

- User must log on as User *username*.
- User must know the product serial number.
- User must know the account passwords. Test Procedure:

Complete the following procedure to test each primary function of the application. You must describe each step that is required to test a primary function. Please describe specific data that has to be entered or selected.

### Example:

- Create a new Sales Order:
  1. Select *Customer* (01121212 - Spotsmeyer's Furnishings).
  2. Enter *External Document No.* (646521).
  3. Add Items to Lines:
    - Line 1: *Type* – Item, *No.* – 1000, *Quantity* – 10.
    - Line 2: *Type* – Item, *No.* – 1200, *Quantity* – 5.
  4. Change order status to Released by selecting *Release* action in the Home tab.
  5. Post the order by selecting the *Post...* action in the Home tab. Please select the *Ship and Invoice* option in the dialog window.
  6. Open the posted invoice.
  7. Print the document by selecting the *Print...* action in the Actions tab. Please select *Preview* in the request page.

## APPENDIX C: USE OF RAPIDSTART SERVICES

### Configuration Questionnaire

RapidStart Services for Business Central on-premises provides you with tools that you can use to set up companies and migrate legacy data for tables in Business Central on-premises. Examples of the types of data that you can migrate include information about existing customers and vendors.

The Configuration Questionnaire is a collection of industry-specific questions and suggested answers that help you update the contents of Business Central on-premises setup tables (for example, tables 79, 98, 311, 312, 313, and so on).

The questionnaires help structure and document business information and data based on a detailed discussion about specific solutions. The information collected helps reduce the implementation workload by streamlining the repetitive tasks any implementation requires, such as setting up local address formats, posting of discounts, automatic cost postings, and number series.

The questionnaire guides the user and the implementation consultant through the Business Central on-premises setup requirements from a business perspective to ensure that the setup reflects the customer's business rules. The questionnaire can be presented as an Excel Workbook, so the user needs no prior Business Central on-premises training to be able to work with the questionnaire.

	Question	Answer	Comments
1.0	Have you used the Configuration Questionnaire in your solution?		
1.1	Have you added information to the Configuration Questionnaire? (If YES, please describe the additions in column Comments)		
1.2	If you have answered NO in 1.0, please describe the reason for not using the Configuration Questionnaire in column Comments.		

### RapidStart Services Configuration Packages

With RapidStart Services for Business Central on-premises, you can create configuration packages with most of the setup tables already filled in, so that customers only have to change a few settings after the package is applied. The configuration packages are built on a preconfigured company. After you have setup a company that meets your needs, you can create a configuration package that contains relevant data from this company. You can then use it when you create a new company that is to be configured in the same way.

Reusing common data saves implementation time and makes a more industry-specific setup possible.

	Question	Answer	Comments
1.0	Have you used RapidStart Services configuration packages in your solution?		
1.1	Have you created one or more industry-specific configuration packages?  (If YES, please describe the type of data you have added in the column Comments )		
1.2	If you have answered NO in question 1.0, please describe the reason for not using configuration packages in the column Comments.		

## Using Configuration Templates

Nearly all implementation projects include the task of migrating the customer's legacy master data.

The templates included in RapidStart Services for Business Central on-premises can make this task easier. Rather than having to build a specific function to transfer master data for each individual project, RapidStart Services make it possible to only have to transfer a limited amount of information, as illustrated in the following example:

In Table 18, you can select customer master data by selecting general information fields such as: Name, Address, Postcode, and City; and communications fields, such as: Phone, Fax, E-mail, and Homepage. You can then link to the configuration template which contains mandatory information for that customer group. You then apply the data to the database and the program transfers customer master data ready for use.

The configuration templates also make it easier to create specific master data to train end-users and to use in daily operations. Once implemented, you only have to enter, for example, the item description, (Business Central on-premises provides the item number automatically – depending on the setup) and then apply the appropriate template; and the mandatory fields are correctly copied from the template to the actual master data record.

	Question	Answer	Comments
1.0	Have you used configuration templates in your solution?		
1.1	Have you added configuration templates? (If YES, please describe which master data types in the column Comments)		
1.2	If you have answered NO in question 1.0, please describe the reason for not using configuration templates in the column Comments.		

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