



Agile Business Suite

Developer Software Release Announcement

Release 9.0

December 2023

3826 5930-010

NO WARRANTIES OF ANY NATURE ARE EXTENDED BY THIS DOCUMENT. Any product or related information described herein is only furnished pursuant and subject to the terms and conditions of a duly executed agreement to purchase or lease equipment or to license software. The only warranties made by Unisys, if any, with respect to the products described in this document are set forth in such agreement. Unisys cannot accept any financial or other responsibility that may be the result of your use of the information in this document or software material, including direct, special, or consequential damages.

You should be very careful to ensure that the use of this information and/or software material complies with the laws, rules, and regulations of the jurisdictions with respect to which it is used.

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions.

Notice to U.S. Government End Users: This software and any accompanying documentation are commercial items which have been developed entirely at private expense. They are delivered and licensed as commercial computer software and commercial computer software documentation within the meaning of the applicable acquisition regulations. Use, reproduction, or disclosure by the Government is subject to the terms of Unisys' standard commercial license for the products, and where applicable, the restricted/limited rights provisions of the contract data rights clauses.

Contents

Section 1. Product Overview

What does AB Suite Include?	1-1
Building an Application	1-2
Agile Business Suite Runtime	1-3

Section 2. Hardware and Software Requirements

Hardware Requirements	2-1
Software Requirements	2-2

Section 3. Upgrade Process

Upgrading AB Suite	3-1
------------------------------	-----

Section 4. Release Functionality

Static Code Analysis – Comment Pages	4-1
Static Code Analysis – System Modeler	4-1
Error List Operations	4-1
Multi-select on Error List	4-2
Find All References	4-2
New Version File Policy	4-2
Developer Change Log and Presentation Impact Analysis	4-2
Track Active Item in Class View	4-3
Error List - Current Document Filter	4-3
Add New Item Dialog – Attribute Auto-Templating	4-3
Select Type Dialog - Improved Type Finding	4-3
Changes to Presentations and Direction	4-3
Import	4-4
Version Control	4-4
System Modeler Project File Recovery	4-4
Merge Utility Enhancements	4-5
Three-way merge	4-5
Model	4-5
Support for JSON data in External Class (available only for Windows platform)	4-5
Import of OpenAPI	4-6

	Classes and Methods for OPEN API	4-6
	Support of Outbound REST API for Windows.	4-7
	AB Suite Debugger Performance	4-7
Section 5.	Restrictions and Known Limitations	
	Restrictions	5-1
Section 6.	Support	
	Unisys Client Support Center.	6-2
	Direct Telephone Support	6-2
	Software Support Services	6-2
Section 7.	Product Information	
	Documentation.	7-1
	Self-paced Training	7-1
	Instructor-led Training	7-2
Section 8.	Ordering Procedure	
	AB Suite Developer Product Packaging	8-1
	Ordering AB Suite.	8-2
	Licensing Options.	8-2
	Software Update Order to Receive AB Suite 9.0 Release	8-3

Section 1

Product Overview

Delivering features and functionality that increase the productivity and efficiency of the developers, Agile Business Suite (AB Suite®) enables low code development, supports agile development strategies, and extracts more value out of IT investments. AB Suite helps in delivering mission critical business applications.

AB Suite software enables enterprises to deliver superior solutions in today's demanding time frame. Such systems require scalability, reliability, and manageability unseen in less capable systems.

Over the course of more than twenty years, Unisys has demonstrated its superiority in building complete large-scale, reliable systems. AB Suite is the next generation of development tools from Unisys; it incorporates new component-based concepts that make it an ideal tool for building composite applications.

What does AB Suite Include?

AB Suite Developer is an Integrated Development Environment (IDE) for rapid application development. It operates as a plug-in to Visual Studio®, running on a Windows workstation.

Targeted for both new and existing AB Suite users, AB Suite Developer requires minimal orientation for people familiar with Visual Studio.

After the model is upgraded, you can take advantage of significant opportunities to enhance your application, including UML application modeling and Object Oriented (OO) concepts, or new features that can improve the maintainability of your application. Visual Studio IDE, the OO concepts and its high-level developer's productivity language makes AB Suite Developer an ideal tool for C# developers to take the next step towards developing large enterprise mission critical applications for ClearPath MCP and Windows Runtime environment.

The AB Suite Development Environment includes:

- System Modeler – A model-based tool for designing and developing information systems. It allows you to focus on the logical requirements of a system, without worrying about platform-specific implementation details. Individual elements you define in System Modeler translate into multiple physical elements in your Runtime system.
- Debugger – Emulates the host runtime environment on your development

workstation. Using Debugger you can test the application you are modeling and trace any problems. Debugger runs within the Visual Studio IDE.

- **Builder** – Generates a complete application tailored for the specific architecture you are deploying to. The generated application comprises the graphical user interfaces, database tables and access mechanisms, and application code. The application components generated by Builder can be deployed automatically to an AB Suite Runtime host, where they are run and managed.
- **Source Control** – Provided in AB Suite using third-party tools and is used for version management of models and model elements.
- **Automated Test Tool (ATT)** – Verifies the changes in an AB Suite generated application using a series of test steps. It is integrated with the AB Suite Development Environment. It provides functions to record, play back, and edit test sequences for the AB Suite applications deployed on all the supported Runtime environments.
- **Client Framework** – Uses the AB Suite Access Layer based on .NET to provide a new approach to design AB Suite applications. You can use Client Framework for designing a user interface by using standard technologies, such as Windows Presentation Foundation (WPF), ASP.NET Model View Controller (MVC), or Windows Communication Foundation (WCF).
- **XML Processing** – Sends XML messages to a runtime system, processes the message, and obtains a response from the runtime system.

AB Suite also includes:

- AB Suite Client Tools
- AB Suite Runtime for the ClearPath® MCP Operating System
- AB Suite Runtime for the ClearPath® OS 2200 Operating System
- AB Suite Runtime for the Windows® Operating System

Building an Application

After your application model is developed by using AB Suite Developer, you can build and deploy it to a runtime server using the Builder capability.

Builder produces a fully running system on a server running the AB Suite Runtime from the Developer model, including client, application and database layers. For the AB Suite 9.0 release, systems are generated for the .NET framework on ClearPath® MCP, ClearPath® OS 2200, and Windows Operating System.

Microsoft Build Engine

The Microsoft Build Engine (MSBuild) provides you the option to build AB Suite applications without using the Visual Studio environment. It also allows you to build AB Suite applications on Azure DevOps Services. To build an application using Azure DevOps Services, you must create a Build Definition. Refer to the *Agile Business Suite Developer User Guide* for more information.

Agile Business Suite Runtime

AB Suite Runtime software is used to deploy and support AB Suite applications on a runtime server. AB Suite supports three runtime environment, ClearPath® MCP Environment, ClearPath® OS 2200 Environment, and Windows® Environment.

Refer to the *Agile Business Suite Runtime for ClearPath® MCP Operating System Software Release Announcement* , *Agile Business Suite Runtime for ClearPath® OS 2200 Operating Software Release Announcement* and the *Agile Business Suite Runtime for the Windows® Operating System Software Release Announcement* for more information.

Section 2

Hardware and Software Requirements

Hardware Requirements

The Development Environment can be installed on stand-alone workstations or on Terminal Services. The minimum requirements for these configurations are described below.

Development Environment

The following table shows the minimum hardware requirements for a workstation when the AB Suite Development Environment is installed, either on its own, or together with Builder or Version Control:

Hardware	Development Environment	Development Environment and Builder or Version Control
Processor	Quad Core configuration Intel Core i7 (equivalent or better)	Quad Core configuration Intel Core i7/ Xeon, 3.0 GHz (equivalent or better)
RAM	16 GB or higher	16 GB or higher
Disk space	500 GB	500 GB
Operating System	64-bit Client Operating system	64-bit Client Operating system

Note: Additional disk space is required if the Microsoft SQL Server database is stored on this machine. The required space varies depending on the size and complexity of the system.

It is recommended to provide each developer one or two large screens, so that they can open multiple panes for maximum productivity.

You should have minimum a Quad Core processor, for Microsoft Visual Studio and AB Suite in one machine.

The system configuration for a server environment is highly dependent on a number of factors including the number of users, size of the model and required response time. A more powerful machine than these minimum specifications will likely be required for a larger development group or a larger model specification.

Hardware and Software Requirements

AB Suite Developer is an I/O intensive application because all objects are stored in the model and updated constantly as each object changes.

For the Model Database

The disk space required for the model database depends on the size of the Specification being developed. This includes the number of <<Ispec>> classes, <<Reports>> classes, and lines of logic.

Due to the extensive re-engineering that has been carried out in AB Suite Developer, and the efficiencies of the Microsoft SQL Server databases, the disk space required for a Model database (repository) is significantly less than was required for previous releases of Enterprise Application Developer.

Refer to the *Agile Business Suite 9.0 Software Qualification and Support Matrix* for more information on the recommended hardware configurations.

Software Requirements

The system software configuration required to support AB Suite Developer client workstations is detailed in the following table:

Requirement	Details
Windows Server 2022 Datacenter Windows 10 Enterprise (x64) Windows 11 Enterprise Edition	AB Suite 9.0 currently supports 64-bit Windows 10, Windows Server 2022, and Windows 11 only. It does not support 32-bit Windows. Windows Server Semi-Annual Channel versions, such as version 1709, 1803, and 1809 are not currently supported. Agile Business Suite 9.0 Developer runs in a 64-bit WOW64 environment.
Visual Studio 2019 and Azure DevOps Services	On 64-bit operating systems, Visual Studio 2019 runs in WOW64 environment. Visual Studio Community Edition, Express Edition, and Test Professional Editions are not supported. Notes: <ul style="list-style-type: none">• <i>Visual Studio 2019 version can change frequently. Refer to the AB Suite 9.0 Software Qualification and Support Matrix for the updated Visual Studio 2019 version details.</i>• <i>AB Suite 9.0 is qualified with Visual Studio 2019 and Azure DevOps Services and supports Azure DevOps Server 2020.</i>

Requirement	Details
One of the following: <ul style="list-style-type: none"> • SQL Server 2019 Enterprise Edition • SQL Server 2019 Developer, Standard 	<p>The installation proceeds successfully if SQL Server is not installed. However, before you start using Developer, you must either install a database server or have access to another machine with a database server installed.</p> <p>Notes:</p> <ul style="list-style-type: none"> • <i>SQL Server 2012 Native Client is required for Developer installation that do not already have SQL Server installed locally.</i> • <i>AB Suite 9.0 currently supports SQL Server 2019. Please contact AB Suite Support if you require support for an older level of SQL Server.</i> • <i>If you are using an SQL database, ensure that the SQL Server is configured to allow both SQL Server and Windows authentication. Refer to the Agile Business Suite Installation and Configuration Guide for more information.</i> • <i>SQL Server 2019 need not be installed on a Developer workstation when the Model database is on another machine. However, it is required only when you need a local Model database. If the model database is on another machine, then SQL Server Native Client is a requirement for the Developer workstation.</i>
Microsoft Visual C++ Redistributable for Visual Studio 2019 latest update	No comments for this requirement.
Microsoft SQL Server Management Studio	No comments for this requirement.
Microsoft SQL Server 2012 Native Client	This is a mandatory pre-requisite for AB Suite Developer installations that do not already have SQL Server installed.
.NET Framework 4.8	.NET Framework 4.8 is required. Note: <i>.NET 4.8 is qualified on Windows Server 2022 Datacenter and Windows 11 Enterprise Edition. It is supported on Windows 10 Enterprise (X86).</i>
Oracle Java Plug-in Version 19 Open JDK Version 19	This is used for generating Java based applications. Note: <i>Java 64-bit is supported.</i>

Hardware and Software Requirements

Requirement	Details
Enterprise Output Manager 13.0 (64-bit)	This is an optional supported application.
ePortal 11.0	Supports capabilities of many client technologies, including HTML5, mobile web forms (iOS, Android, Blackberry, Windows Phone), ASP.NET Web Forms, ASP.NET Web Services, WCF Services and REST services.

Section 3

Upgrade Process

Applications created in AB Suite 2.0 or later can be directly imported to AB Suite Release 9.0.

Upgrading AB Suite

Before upgrading to AB Suite from any previous release, you need to:

- Inform Unisys about your upgrade plans and also share the completed migration qualification checklist. For this either contact your local representative or reach us at ABSuite@unisys.com
- Back up your system and data.
- Ensure your environment meets the hardware and software requirements for this release.
- Install AB Suite Developer, if you want to upgrade the development environment.
- Install AB Suite Runtime.

Section 4

Release Functionality

Static Code Analysis – Comment Pages

The Comment Pages is enhanced to provide a summary view of your application. This new option generates a quick overview of the structure and the most important metrics of your application. These metrics now include the 'Unreferenced', 'Memberless' and 'Typeless' elements in the application.

Performance improvements have been made to the Comment Pages build to ensure they will complete much faster.

Static Code Analysis – System Modeler

Static Code Analysis is integrated into AB Suite System Modeler using Static Analyzers. Analyzers run in the background and identify areas for improvement in the application. Any area of improvement identified is shown in the **Error List** window under the **Messages** tab by default.

The Static Analyzers configuration is stored in a new configuration file in the System Modeler project called ". smconfig". The configuration can be accessed from the Solution Explorer of your application and can be checked in to TFS to keep the rules consistent for all developers.

You can configure the Static Analyzers to increase (and decrease) the strictness of their enforcement across the application. An Analyzer can be hidden, and ignored completely, or escalated from Info to a Warning or an Error.

Static Analyzers can also be suppressed, for an element where its state is known and accepted. The rule will be ignored for that scenario but still apply in all other scenarios.

Error List Operations

Quick Actions are implemented in the **Error List** window to assist with correcting any issues detected. The **Quick Action** can be accessed by right-clicking on message in the **Error List** window and selecting an appropriate action.

The available actions are:

- Delete
- Delete All (errors of a type)
- Select Type
- Extract Type
- Use Type Of (*Logic editor only*)

These Quick Actions are also available from the logic editor and denoted by an underlining of the element with:

- Three Grey dots for an **Info**
- Green squiggle for a **Warning**
- Red squiggle for an **Error**

Multi-select on Error List

You can select multiple messages on the **Error List** window and execute any actions that are in common. For example, select multiple attributes and set the same Primitive type.

Find All References

Find All References can be initiated from the **Error List** window on the element described in the Static Analyzer message. (Disabled on multi-selection.)

New Version File Policy

The Version File Policy is integrated into the project so that it is kept consistent for all developers of your application. These settings are now stored in the project file.

The Version File property is updated to provide more control. Options are available to select an existing Version File, Create a new Version File or Rename the Version File

Developer Change Log and Presentation Impact Analysis

All changes made during development is now captured in the output window. This contains the property, the element, the before and the after values.

Additionally, if that change impacts how a screen looks visually at runtime, this analysis is now captured and displayed in the output window. This helps developers identify and inspect changes to screens as they happen.

For example, when the length of a Primitive Type is modified, all attributes that template to that primitive, that are painted on a screen, are displayed in the output window.

These messages can then be double-clicked to navigate directly to the element, altered, on the associated screen, for the applicable language.

All property changes that affect a presentation are logged, including those that affect control size, color, and font. This also includes those changes that add and delete controls on the screen such as Direction and IsCopied.

This feature is turned on by default, but you can turn it off in the System Modeler Options.

Note: *Imported changes will not trigger messages to be written to the Output Window.*

Track Active Item in Class View

After you enable the **Track Active Item in Class View** option in **Options > System Modeler > Track Active Item in Class View**, the Class View automatically performs a “Synchronize Class View” operation on the focused element in the Document Window. This ensures that the Class View always reflects the document that is in focus.

Error List - Current Document Filter

The **Error List** window can now be filtered to show only those errors, warnings, and messages relating to the current Document. In the **Error List** window, select “Current Document”.

Add New Item Dialog – Attribute Auto-Templating

The **Add New Item** dialog is enhanced to automatically lookup and find an appropriate Type to template from. If a Type – Primitive or Class – exists with the same name as entered, the template will be set when the field is left (either tabbed or another field selected).

Note: *This behaviour is enabled when you expand the **More** option, and the **Template** property is visible. Otherwise, the **Template** property will not be set, irrespective of their being a suitable Type available.*

Select Type Dialog - Improved Type Finding

- Matching Types - Shows only types matching the attributes definition.
- Similar Names - Shows types of a similar name to the element.

Changes to Presentations and Direction

- Direction property editing has been moved back to the Properties Window from the Painter Properties. (Change)
- Direction can be modified in the Properties Window (Change)

- Model Rule Warning for any attribute with Direction but not painted on a presentation
- Upon opening the Painter, attributes not painted but with Direction set, will be automatically. (Change)
 - This will mark the painter as 'modified' (Change)

Import

- Importing an mdl can only be performed into a new or existing migration database. It will be read-only until it is exported and imported into a new Model database.
 - "As a Migration database" is removed from the Advanced settings, this is implicit (Change)
 - -p option is removed from the command line (Change)
- Import Wizard for Web Services to support import of OpenAPI specification file for RESTful Web Services.

Version Control

- Version File Policy improvements (Change)
 - Policy is now implemented on the project and versioned.
 - Primitives, Groups and Attributes can be self-versioned.
 - *Version File* property is updated to be a drop-down list: (Change)
 - Select, Rename, New, <Owner VersionFile>, <Container VersionFile>
 - Right-click AB Suite project in solution explorer, Properties > Policies
- The SQL files for cloning the AB Suite Model Database are stored in the AB Suite installation path.
- For two elements with the same name, the Merge tool will retain or remove all attribute values of the selected element when the left or right side is selected (Change).
- When you open the model files from the View, Compare or Merge utilities, the language tab is shown as the first element if the model files contain language tag (Change).

System Modeler Project File Recovery

System Modeler project file is recovered automatically if Visual Studio shuts down unexpectedly. The newly added version file(s) is recovered as well. It is strongly recommended that you do not modify the System Modeler project file outside of Visual Studio after Visual Studio shuts down unexpectedly.

Merge Utility Enhancements

The merge utility is enhanced to allow logic edit. Now you can select left and right to resolve a conflict.

You can also directly edit the logic after you resolve the conflict by selecting Left, Right or both Left and Right.

Three-way merge

AB Suite merge utility now supports three-way merge. With three-way merge, the developer can handle complex, multi-layered changes. This is because the process involves comparing the changes made to the original version of the model file to the changes made by the two conflicting versions. Using this information, the three versions can be merged in a way that preserves all the changes while avoiding conflicts and inconsistencies.

Model

The following new constructs added to support REST API:

- GLB items:
 - RESTReturnMessage
 - RESTResonseMessage
- Framework items:
 - RESTApi
 - RESTParameter
 - RESTParameterList

Support for JSON data in External Class (available only for Windows platform)

In the Add New Item dialog, we have two new Serialization entities: SerializationXML and SerializationJSON. A class can implement either of these interfaces.

It can be used to send data in JSON format to External Class. The External Class method parameter must be set to type 'VarString' to accommodate this.

It can also receive JSON format data from External Class. The Return Type must template to the appropriate Serializable Class.

A class can implement multiple interfaces, so we must specify the interface of interest in the AsA clause. During transaction processing, the Serialization class instance is serialized in JSON format, and sent to External Class.

The Return Type Template must be set to the relevant Serializable class. In the above example, 'testCustomer' is an attribute whose Template is set to 'CustomerJSON', a Serializable class that implements SerializableJSON interface. During transaction processing, the JSON data from External class is De-serialized to Serializable class instance.

Import of OpenAPI

The Import Wizard has a new entry for Web Service.

The Web Service wizard has option for SOAP, WCF and REST Web Services.

The option of REST can accept either the Open API file in JSON format, or the URI.

On Discover, it will parse the Open API file, and list out all the REST end points.

OpenAPI is modelled as a series of methods, classes under a root class which represents the OpenAPI definition.

The REST end points map to External Class Methods.

The Request Body Parameters in Open API methods are Modelled as Serializable class.

Classes and Methods for OPEN API

Instead of external classes with Component Type set to REST, we now have normal classes having methods with logic representing operations available in each end point as specified in the Open API file.

Framework now has members like RESTAPI, RetCode, RetMsg, Parameter, Parameters. The Serializable class has built-in methods like POST, PUT, PATCH, GET, DELETE, and so on.

An Import Wizard for OPEN API now also creates Serializable classes representing the components, request, response body, and it will also create methods representing the operations available in each of the end points.

The master class with methods and other supporting classes that gets created on importing Open API file.

It has enough information to construct a request, that is URL, end point, request body, and finally an action indicating one among POST, PUT, GET, DELETE, PATCH.

Except Put(), rest are protected methods.

A typical Put() method logic in a parameter.

It has details about the parameter name, its type, like if it is Path, Query, Form, Header, or Cookie parameter, and finally the value is assigned to the base object, which would be the Runtime Framework that supports this structure and will use this information to construct the REST request.

The class structure representing the components as specified in the Open API file.

Support of Outbound REST API for Windows

- Import wizard has a new entry for Web Service.
- The option for REST under Web Service wizard accepts OpenAPI definition file in JSON/YAML format. It also accepts URI that has the OpenAPI definition.
- The Wizard enables to discover the REST end points, generate classes and methods in Model that represents the REST end points.
- The components in OpenAPI definition are modeled as Serializable class.
- The parameters in OpenAPI definition are modeled as class of type Framework.RESTParameter.
- The end points in OpenAPI definition are modeled as methods, with logic generated to invoke REST APIs. The methods have variable of type Framework.RESTApi, which exposes REST verbs like, PUT, POST, GET, DELETE, PATCH.

AB Suite Debugger Performance

- Fewer clicks to start Debugger with MCP HDBA

In this release, you can start the AB Suite Debugger for MCP configuration with HDBA with few clicks. Note that this feature will only work if MCP Deployment and Debugger use the same configuration name.

This feature provides the following key functionalities:

- Auto-population values of configuration properties.
 - Save 'Time and Effort' for Developers.
 - Automatic creation of a capability file.
 - Automatic detection of Unisys OLEDB on Windows machines.
- Debugger Report Viewer
The Debugger Report Viewer application allows to generate and see the Debugger generated report output in HTML format in any browser.
 - Debugger Performance Improvement
Debugger performance is improved in the following areas.
 - Using large complex arrays in AB Suite.
 - Processing unattached reports.
 - Processing of large primitive arrays.
 - Method invocation.

Release Functionality

- Execution time for ISPECs and Reports.

Section 5

Restrictions and Known Limitations

Restrictions

This section describes the restrictions and limitations that apply to AB Suite Release 9.0 Developer and Builder.

Developer Installation

- When you install AB Suite 9.0 Developer, you can either set the Builder Cache path for All Users or for Current User only. The Builder Output path, however, can only be changed from Visual Studio. For more information refer to Performing the Developer Installation section in Installation and Configuration Guide.
- When Visual Studio is installed only with non-English pack, the Developer installation may fail with 1722 error. To work around the issue, please follow the steps as mentioned below:
 - Install SQL Server Management Studio 18.9.2 with the same non-English pack
 - Run windows update
 - Run Visual Studio installer and repair Visual Studio
 - Restart the machine
 - Try to install Developer
- Developer installation might fail with install error "The process terminated unexpectedly". To resolve this issue:
 1. Run the Visual Studio installer and modify Visual Studio settings.
 2. Uncheck the **Azure Compute Emulator** component under the **Individual Components** tab.
 3. Click **Modify**.
 4. After Visual Studio setup is complete, restart the machine.
 5. Try to install Developer again.

Automated Test Tool (ATT)

- ATT cannot record multiple sessions for a client application.
- For Winform Container client, ATT cannot record the Specs that contain static image.

Restrictions and Known Limitations

Model

- An array of Files, SQLScripts, or Frames are not supported at runtime.
- Parameters and Return Variable as an array are not supported at runtime.
- OutputStream can be sub-classed but has limited support at runtime.
- Binary and FileBinary only supported on MCP runtime.
- Varstring is supported on the Windows Runtime only.
- Array type supports members of Primitive type only.
- In a Kanji model, a warning message may appear, in the error list window and also the build log, despite the caption length being less than 16 characters. This is due to an incorrect calculation of single-byte Kanji characters in the rule. This warning can be ignored where the caption is known to be less than 16 characters. Alternatively, the warning can be suppressed - in the Error List.

Right-click the warning and select suppress > Suppress R0113 for '<Element Name>'.

This problem will be addressed in the first IC.

Import

- There are known issues with restoring BCK files and smproj files from a previous release. Databases must be exported to a single ".model" file using the previous version of AB Suite Export and imported into new AB Suite Developer databases. Additional objects will be added to the upgraded databases to compensate for the new model enhancements.
- There is a known issue when importing a model file from a previous release into AB Suite 9.0. Therefore, it is recommended to not modify the default setting that is set to Substitute in the On Element Clash option on the Import dialog box.
- There is a known issue that occurs when importing a model file that was extracted from AB Suite 6.1.1033~6.1.1042 or AB Suite 7.0.1001~7.0.1006. If the model contains multiple Configuration Names, which have copy relationship included, the import of the model file might fail with the error.

"Error - Property 'Inherits' failed: Invalid object ID"

As a workaround, import the model file to the same database again with the "Replace" option set for "On Element Clash". This action loads the information in the model file correctly. Alternatively, you can extract a new model file, after upgrading a previous project to the latest IC with Model Migrator, and then import it into the destination database.

Version Control

- There are some conflicts that can confuse you when merging two branches on TFS, such as:
 - If a configuration with the same name is added to branch A and branch B, both configuration names will be displayed as a conflict in the merge tool when merging the two branches. The reason for this conflict, even though the names are the same, is that they have different IDs. In this situation, you can resolve the conflict by choosing the target branch.
 - If different elements are added to the same folder in two branches, you can choose either branch in the merge tool, as the lack of folder members in version files of folders will not impact the importing procedure. However, we suggest users to choose the target branch.
 - The platform information is not displayed in the Configuration tab of the View/Compare/Merge utility.
 - The focus will return to the first logic line in the left pane after clicking on '<no src line>' in the logic-result pane.

Migration

When comparing the "before" and "after" model files (A and B) with Compare.exe, the comparison for a control with the Bright property set to True will show that the value of the BOLD property has changed from "Yes" to BLANK, and the value of the TEXT property has changed from BLANK to "^". These two models are different versions of an element which has a Fixed screen presentation.

- A model is exported after migrating the element to AB Suite.
- B model is exported after making an unrelated change on the Fixed painter.

The changes do not make any difference to the presentation in developer or at runtime for MCP. You can proceed with accepting them.

Debugger

- Debugger does not support single report build (or partial report folder build).
- The first modification of a method, that contains an Insertable, during a Debugger Edit and Continue session will not modify the editor or be available in the undo stack.
To work around - Close without saving, and re-open
- The new *Alternate Name* property in debugger configuration does not support the SwitchTo command.
- If an unattached report is stopped during the debug session, Debugger stops the report and will not perform the retry operation.
- Debugger with MCP configuration does not support the COBOL COMP format to store a number array due to Unisys OLEDB limitation. Therefore, the way of storing and retrying these data in DMSII is different from MCP Runtime.

Restrictions and Known Limitations

- Autos window has an issue. This window does not display the Component field while debugging an AB Suite application. This issue can be resolved by adding the Component field in Watch window.
- Tool tip no longer shows the entire string representation of an array in debugger. Therefore, you have to use the Immediate window in Visual Studio during the debug session to see the string representation of the array.
- You will not be able to debug a Report by selecting one of its methods from the Class View.
- When mapped network drive is used in LDL+ logic to do file operation, error is thrown during Debugger. The cause of the issue could be because the network components on the domain controller are not configured correctly or the Windows Operating System is unable to resolve the mapped network drive path.

A workaround to this problem is to use the UNC path (the path to a folder/file on a network that contains the server name in the path) instead of using the mapped network drive letter in the logic.

For example:

```
MV "\\<<Server Name>>\\<<Folder on network>>\\<<Folder Name>>\\<<Text file>>" Filename
```

- During a Debugger Edit and Continue session, the first modification will not mark the editor as modified or appear in the undo stack. The work around is to make a second change, close without saving and then re-open.

System Modeler

- The .smconfig file is created automatically when a new AB Suite project is being created. This applies to all the various project wizards available for AB Suite except the Restore BCK file as this does not create a new project file.

When upgrading to 9.0, the upgrade of the solution/project will not add the .smconfig file to the existing project. This will be added the first time the Static Analyzer configuration is started.

- Upgrading a User Experience Model from a previous version of AB Suite will result in many false warnings of the form – “Attribute has Direction but is not in the IGraphical”. These can be ignored, or suppressed and will be resolved in the first IC.

Installation

The developer installation becomes unresponsive on Non-English machine and the log displays a message that another installation is in progress.

The workaround for this issue is to uninstall the Visual Studio, install an English language pack for the operation system, install Visual studio, and then install AB Suite Developer. This issue is under investigation by Microsoft.

Visual Studio Logic Editor

Some logic references continue to show a GUID instead of a qualified element name. This is an issue with the Visual Studio logic editor and is under investigation at this moment.

XML Processing in AB Suite

Some Messenger transactions fail on the second transmit in the Debugger.

Client Framework

Unisys.ABSuite.AccessLayer.Connector project references are not updated when importing from an AB Suite 9.0 BCK file. References need to be updated manually for now.

MCP Runtime Specific

The following restrictions in Developer are specifically due to runtime limitations for the ClearPath MCP operating system:

- Restrictions on IsInner Classes
Owner Data is not passed nor returned from user defined methods (non internally overridden methods Construct, Prepare, Main, Edit for Stereotyped classes such as Ispec, CopyIspec, Event, CopyEvent) of the IsInner Class(es) in this release.
- Restrictions on Method parameters/return types
Polymorphism for class parameters / return types is not supported in this release. When generating a method with a potential polymorphic parameter to the MCP platform, a warning will be sent into the output log.
- Restrictions on inherited Methods
Internally overridden methods Construct, Prepare, Main, Edit (for Stereotype classes such as Ispec, CopyIspec, Event, CopyEvent) are not inherited in this release.
Similarly, in this release you cannot call an inherited Framework method of an Ispec.
If during a build to MCP, MCP Target Builder encounters logic that attempts to call an inherited framework method of an Ispec, a warning message will be sent to the output window to state that the logic in question has been ignored.
- Restrictions on Frame User Defined Methods
Frame user defined methods are not available in this release. If a frame user defined method is found during a build to the MCP platform an error will be sent to the output window and the generate cancelled.
- Restrictions on Polymorphic assignment
Only persistent polymorphism is supported in this release. Any non-persistent data is indeterminate after a polymorphic assignment.
- Restrictions on Aggregated Class Instances
Persistent Aggregated Instances:
Aggregated persistent instances are not supported in this release. If an aggregated persistent instance is found defined under a class during a build to the MCP platform, an error will be sent to the output window and the generate cancelled.
Aggregated Instances:

Restrictions and Known Limitations

Aggregated class instances are not supported within user defined Methods (non internally overridden methods Construct, Prepare, Main, Edit for Stereotyped classes such as Ispec, CopyIspec, Event, CopyEvent). The value of any aggregated instance used in a user defined method is indeterminate.

Extracting a class that contains an aggregated class instance is also not supported in this release.

- Restrictions on First() and Last():

First() (other than a First on a simple String object) and Last() LDL+ methods are not supported in this release. Any logic trying to use these methods in the unsupported context will see a warning displayed in the output window (during a build of the system to an MCP host) and the logic will be ignored.

- Object Arrays of inherited classes:

Object arrays of a class in an inheritance structure will not be supported in this release.

- Restrictions on Extract Files / Extracting:

Extracting from the online (non report/frame):

Non report/frame built-in methods, non report user methods, and segment methods are restricted to extracting data from non report/frame classes in this release. Extract files defined at the Segment level cannot be referenced directly. You must create an instance of the extract file under an Ispec/vanilla class/report and refer to the instance defined under the Ispec/vanilla class/report.

Aggregated Instances:

Extracting a class that contains an aggregated class instance is also not supported in this release.

- ROC and ADHOC models do not upgrade to AB Suite correctly (underscores in Ispec names are migrated out). This means it will not work at runtime.
- OLTP systems must have a default segment service name defined.

Number of Keys on Ispecs

Ispecs with greater than 16 keys cannot be used with a Microsoft SQL Server database. Microsoft SQL Server has a maximum capability of 16 keys for an index. If the user tries to use greater than 16 keys they will see the following DBReorg error:

```
"2006-06-15 10:47:03.250 DBReorgEXE(1564:5360) [ABC-1\adminuser];
```

```
L11::Fatal::Action failed::Cannot specify more than 16 column names for statistics or index key list. 20 specified."
```

It is recommended that you specify less than 16 keys. It will also improve your database performance.

This error can also occur when debugging an MCP system using a Microsoft SQL Server database.

Static Analyzers

Recommendations:

- Perform a full validate of the application after import. This will ensure that the Static Analysis and Build Comment pages perform optimally.
- Untyped attribute, variable, and parameter analyzers are set to severity hidden by default as most applications contain numerous untyped attributes. These analyzers can be enabled by increasing the severity in the Static Analysis configuration page.

Limitations:

- Static analysis runs in the background when a project is opened. This takes time to complete scan of a large application as all relationships are analyzed. The activity can be seen in the Task Center in the bottom left-hand corner of System Modeler.
- Updating the configuration of the Static Analyzers results in all Static Analyzers being run for the application. The Task Status Center indicates when this operation is complete.

Restrictions and Known Limitations

Section 6

Support

Unisys brings together powerful hardware and software, multi-language support, and technical professionals to deliver 24-hour global service. All Unisys support services are fully integrated to provide you with real-time access to the critical information you need.

Unisys Support Center puts a wealth of technical information regarding hardware and software product support services at your fingertips. Unisys technical specialists provide updated symptom and solution information, including frequently asked questions.

Unisys Support Center is available 24 hours a day, 7 days a week.

Visit the Unisys Support Center at <http://www.support.unisys.com> for more information.

Unisys Support Center allows you to:

- Search technical databases for information on a problem.
- Download Interim Correction (IC) files containing fixes.
- Track the progress of software updates and fixes.
- Participate in support forums.
- Access instructional information in Customer Technical Bulletins.
- Log and track support requests.

Contacting the Unisys Support Center

To initiate a support request, do either of the following:

- Submit a request online through the Unisys Support Portal at <https://login.unisyssupport.unisys.com>. After you log on, click the Unisys Support Portal tile to access the Unisys Support Portal. Use the portal to Create, View, and Update incidents.
- Contact the Unisys Call Reception Center (CRC). Access the Unisys Support website at <https://www.unisys.com/about-us/support>. The site provides links to various types of support.

Unisys Client Support Center

The Unisys Client Support Center (CSC) is your information resource for problems that cannot be resolved through Unisys Support Online or your site administrator. Your site administrator can place a support request electronically.

The Electronic Support Request interface allows you to pose technical questions, discuss technical issues, and escalate design concerns with the experts at the Unisys Client Support Center.

When logging an Electronic Support Request you will be asked to specify the:

- Hardware model number
- Operating environment
- Software product and level code

The software product and level code for AB Suite Developer Release 9.0 is AGILE-BUSSUITE- DEV-9.0.

Direct Telephone Support

Unisys also offers direct telephone support. If you are located within the continental United States or Canada, you can call one of the following toll-free numbers during the times indicated in your service agreement:

- United States 800-328-0440 (prompt 4)
- Canada (English) 800-387-6181
- Canada (French) 800-361-8097

Customers outside the continental United States or Canada can visit the Unisys Support website at <https://www.unisys.com/about-us/support/phone-support> to find country wise contact information or contact the local Unisys representative for support.

Software Support Services

Unisys Client Support Centers offer Software Support Services, a full complement of technical services to help clients with cost effective, fast-cycle support.

If you are located in the United States call Unisys directly on 800-328-0440 (prompt 4), or contact your local Unisys representative.

Section 7

Product Information

Documentation

Visit the Unisys Product Support website at <http://www.support.unisys.com> for the latest version of the Unisys AB Suite 9.0 Information Center.

AB Suite product documentation located under the Application Development category of the Unisys Product Support site:

<https://www.support.unisys.com/common/epa/DocumentationLibraries.aspx> provides technical product information on all software, including:

- AB Suite Developer
- AB Suite Runtime for the ClearPath® OS 2200 Operating System
- AB Suite Runtime for the ClearPath® MCP Operating System
- AB Suite Runtime for the Windows® Operating System
- AB Suite Client Tools

Self-paced Training

Self-paced training is available for AB Suite Developer.

The training is a self-study guide to developing applications using AB Suite. Interactive lessons help students understand concepts, and practical hands-on activities apply these concepts to build and test a simple application.

Getting Started with Developer

Getting Started with Developer explains AB Suite basics, including components, the runtime cycle, logic, and debugger.

The course contains:

- A student guide with lesson summaries and activities.
- Computer-based training lessons.
- Screen demonstrations on how to complete tasks in the Developer environment.

The topics covered in the course include:

Product Information

- Installing AB Suite
- What is Developer
- Using the Model
- Using Folders and Dictionaries
- Introducing Classes
- Testing your Forms
- Defining Events
- Introducing the Runtime Cycle
- Defining Logic
- Controlling the Runtime Cycle
- Designing User Interfaces
- Debugging your Application
- Errors and Feedback
- Simple Data Manipulation
- Using Methods
- Using Vanilla Classes
- Defining Profiles
- Advanced Data Manipulation
- Developing Reports
- Using Session-persistent Attributes
- Deploying your Application
- Introduction to Automated Test Tool

Getting Started with Developer for AB Suite Release 9.0 (part number 47259197-014 for the student work book) can be ordered from the <https://www.unisys.com/client-education/>.

Instructor-led Training

Instructor-led training is available for AB Suite Developer.

The training is an Instructor-led training to develop applications by using AB Suite. The classroom sessions help students to interact with the instructor and understand concepts. The practical hands-on activities help students to apply these concepts to build and test a simple application.

The instructor-led trainings contain student notes for each module, instructor slides corresponding to the modules in the student notes, sample files used in the practical exercises, and instructor guide containing detailed instructions for the instructor.

Section 8

Ordering Procedure

AB Suite Developer Product Packaging

When you purchase an AB Suite Developer Release 9.0 license, you will receive:

- AB Suite Developer Release 9.0 installer containing:
 - AB Suite System Modeler software and documentation
 - Automated Test Tool
 - AB Suite Client Tools software and documentation
 - AB Suite Component Enabler
 - Java and .NET Framework versions
 - AB Suite Presentation Client
 - AB Suite Client Generators
 - Presentation Client Generator (C# implementations)
 - ASP .NET Web Forms Generators (C# implementations)
 - ASP .NET Web Services Generator (C# implementations)
 - VB .NET Forms Client Generator (C# implementations)
 - ePortal Generator (C# implementations)
 - AB Suite Business Integrator
 - AB Suite Client Framework
- A printed copy of this Software Release Announcement

When you purchase a license for the optional, separately ordered AB Suite Generator Customization Kit, you will receive:

- The Agile Business Suite Generator Customization Kit Key Letter that will enable you to install the customization kit software from the Developer installer.
- AB Suite Generator Customization Kit document.

Ordering AB Suite

Contact your Unisys client executive, or an authorized Unisys Value Added Reseller, requesting this new release. After confirming entitlement for this release for your organization, they will submit the necessary software update order. The software will be posted on the Unisys software download site and your authorized contact will be informed of access details to download the software.

Licensing Options

AB Suite Developer and the Generator Customization Kits are licensed on a concurrent user basis. Developer can be licensed in single license increments, in Multiple License Packs, or in a combination of the two.

Notes:

- *In all cases you are required to buy a license of Microsoft Visual Studio 2019 and one of the qualified SQL Server versions, and Azure DevOps Services.*
- *As Unisys and Microsoft provide regular new releases, we strongly advise you to go for a MSDN contract with Microsoft that covers support and regular upgrades.*
- *The required number of Runtime licenses is equal to the maximum number of concurrent users that could be actively using it at any one time. You are required to notify Unisys when additional users are added to order additional user licenses.*

Usage Level

AB Suite Developer Multiple License Packs are an economical and convenient way for you to order the number of Developer licenses you need. In addition to providing a quantity discount, they also simplify the ordering and maintenance agreement tasks by reducing the number of individual styles involved in each process.

Note: *The required number of Developer or Generator Customization Kit licenses is equal to the maximum number of concurrent users that could be actively using each product at any one time.*

Types of Licenses

Depending on your current licensing situation, different types of licenses are available:

- New licenses
- Upgrade licenses
- Select Software Update (SSU) Subscription licenses

New Licenses

New licenses are for new users who need initial licenses for AB Suite Developer and/or Generator Customization Kit, or for current users who require additional licenses.

Upgrade Licenses

Upgrade styles are available for customers who have a license for AB Suite Developer 2.x, 3.x, 4.x, 5.x, 6.x, 7.x or 8.x and a maintenance agreement but do not have a SSU Subscription for it.

Select Software Update (SSU) Subscription Licenses

SSU Subscriptions provide 'no additional charge' updates to future releases for an annual or fixed period subscription fee.

Customers with a SSU Subscription and valid maintenance agreement do not pay an upgrade fee when upgrading to a new chargeable release level. SSU Subscription coverage must be continuous from the original software shipment date.

SSU Subscriptions are available for new licenses as well as for update and upgrade licenses, and are ordered using the relevant SSU Subscription style ID.

Note: *SSU Subscriptions can be purchased only when ordering a new, update or upgrade license, or at the renewal for an existing subscription license.*

Software Update Order to Receive AB Suite 9.0 Release

Customers who have valid license, continuous subscription and maintenance coverage for AB Suite Developer are entitled to the same number of AB Suite Developer 9.0 software update licenses at no additional charge.

Contact your Unisys client executive, or an authorized Unisys Value Added Reseller, requesting this new release. After confirming entitlement for this release for your organization, they will submit the necessary software update order.

Ordering Procedure

