

# Developing AGILITY April 2022



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## Secure, Low-Code Development: AB Suite Release 8.0



*By Thangathen Ponnusamy, Senior Product Manager, Agile Business Suite*

Agile Business Suite (AB Suite®) Release 8.0 was officially made available in January 2022!

With this new release, you can take advantage of low-code development on ClearPath® MCP and Microsoft® Windows® platforms. And, for

the first time ever, AB Suite is now supported in the **ClearPath OS 2200 environment**. As we welcome OS 2200 clients to AB Suite family, our initial focus will be to ease the transition from Enterprise Application Environment (EAE) to AB Suite on OS 2200 by providing a runtime environment that's similar to EAE in terms of behavior, performance characteristics, etc.

Aside from this exciting announcement, AB Suite 8.0 includes a number of noteworthy new enhancements. Read on to learn about all the great things built into this release.

### Low-Code Development Technology

The development environment for AB Suite 8.0 is integrated with Microsoft Visual Studio® 2019. As part of this integration, you'll see a new start window that streamlines the launch experience so you can access your code faster. Likewise, you can quickly search for AB Suite project templates by their title or description.

And thanks to integration with Microsoft Azure DevOps Services and Azure DevOps Server 2020, you'll increase agility and responsiveness by continuously building, testing, and deploying your applications as market demands change. >>



Additionally, with more capability added to the Diagram, you can draw composition relationships to all available types. You'll be able to take advantage of the new Array type. You'll enhance the debugging experience with Set Next Statement, which allows you to change the point at which logic executes in a debug session. And a streamlined Import experience offers a cleaner look, fewer options, and a more responsive design.

## Security

Security continues to be a strategic focus for the AB Suite team, and Release 8.0 offers several enhancements designed to further protect your mission-critical applications.

For instance, AB Suite for ClearPath MCP now supports Secure FTP code transfer, allowing you to execute secure file transfers between the Builder Client and Host FTP Server. FTP over TLS 1.2 is now supported between the Builder Client and Host FTP Server, as well.

With DMSII Structure-Level Encryption (SLE), you'll be able to encrypt complete datasets/tables and all associated sets/subsets (indexes). Plus, because it's very easy to configure and has effectively no limitations – unlike DMSII Field-Level Encryption – you'll have another mechanism for safeguarding your persistent data.

When it comes to AB Suite for Windows, we now support Microsoft SQL Server® Transparent Data Encryption (TDE), which secures your database by protecting SQL Server data and log files using symmetric key encryption and AES algorithms. You'll also be able to take advantage of encrypted RATL over TLS 1.2 when exchanging data between Client Tools and the Windows runtime.

## New Feature Suggestions

This release also includes several updates drawn directly from our clients' New Feature Suggestions. For example, the AB Suite for MCP HUB now supports data packets of 65KB – up from the previous limit of 2KB – allowing much larger data transfers between AB Suite 8.0 applications. We've also increased the limit on the size of a non-persistent string from 262KB to 6MB, so you can manage much larger data strings internally, as well as pass and receive larger method parameters.

## Easier Upgrades

Using our ExportAS feature, you're able to follow a simplified, phased approach when upgrading from AB Suite 7.0 to AB Suite 8.0. Your development team can upgrade to AB Suite Developer 8.0 right away, while production remains on the AB Suite 7.0 runtime. This feature supports Advanced and Standard Modes in the MCP and Windows environments. And if you're on EAE, you can easily transition to AB Suite using Standard Mode – the simplest set of capabilities for OS 2200, MCP, and Windows runtimes.

We would like to thank all of the clients and Unisys associates who participated in Tech Preview and Beta Test programs. Your feedback and inputs were invaluable in bringing this release to life.

*To learn more about the features in AB Suite 8.0, please check out the new video on our [YouTube channel](#). To order AB Suite 8.0, please contact your local sales representative or write to [ABSuite@Unisys.com](mailto:ABSuite@Unisys.com).*



## Low-code/No-code Development: A Conversation with 451 Research

451 Research, a division of S&P Global Market Intelligence, recently met with Thanga Ponnusamy, Senior Product Manager for Agile Business Suite, to discuss the emergence of low-code/no-code development and its impact on development teams and the organizations they support. A condensed version of their discussion is replicated below.

**451 Research:** What is low-code/no-code development, and why is it important to enterprise mission-critical computing?

**Thanga Ponnusamy:** We're facing two key challenges: First, traditional IT systems aren't able to move at a pace the business demands. And second, there aren't enough developers to support emerging business needs, so many new initiatives don't kick off at all. Low-code/no-code technologies help to solve these problems in two ways.

One, as the name implies, these technologies enable developers to quickly build applications with minimal coding. It also enables people we call "citizen developers," those who have limited familiarity with IT, to easily start developing applications.

**451 Research:** Our research shows there are a number of stakeholders – beyond software developers and IT operators – that are critically important to DevOps. Is it fair to say these individuals will benefit from low-code/no-code development?

**TP:** We typically view citizen developers as non-IT people – those in marketing, sales, business operations, and so on. Historically, they depended on IT to create applications. But with this approach, they're able to jumpstart the development of their applications – with the support of IT. This model also helps limit the spread of shadow IT and potential governance issues.

**451 Research:** What are the advantages and synergies enterprises can gain by embracing a low-code/no-code approach?

**TP:** Number one is better collaboration between business and IT teams – this is by far the top benefit we see among our clients. The second is the speed with which organizations can go to market. Speeding up application development by generating code, databases, etc. in the background makes for a faster, seamless deployment.

**451 Research:** It seems low-code/no-code development can address something we see come up as a top challenge in our surveys: conflicting processes and approaches within the organization.

**TP:** This is an area where AB Suite is differentiated from other vendors' offerings. When you're looking at an enterprise-grade application, it's important to realize that you'll have many developers involved who all need to collaborate. And everything from source control to testing to production – it's all effectively managed in AB Suite, across the entire DevOps cycle. >>

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**451 Research:** What are some key capabilities enterprises should consider when evaluating low-code/no-code platforms?

**TP:** The fact is, there are hundreds of vendors in this space, so a lot of due diligence is required to arrive at the right one. And different vendors have different focus areas. Some are good at the database part. Some are good at multi-user experiences. Others focus on process logic or process automation.

So when an organization is evaluating vendors, the first thing to determine is the area they're trying to address and the key capabilities they'll need. Can you get by with something specific, or do you need general-purpose capabilities?

Also, consider scalability and security. These are critical facets of any enterprise-class application, and they'll only become more vital as the number of users continues to grow.

**451 Research:** Ultimately, it's a balance between giving DevOps teams the tools they want, but doing so in a sanctioned and compliant way.

**TP:** Absolutely. Even though the citizen developers are being enabled, it's commissioned, managed, and supported by enterprise IT. That's the big benefit of this approach: eliminating shadow IT.

*To see more of Thanga's conversation with 451 Research, please watch the [full recording](#).*



# Faster than the Average Language: Accelerating Development with AB Suite

By Grantley McCauley, Howard Bell, and Russell Pederick –  
Agile Business Suite Architects

Thanks to an approach that sees transactional applications developed with high-level **business objects** that execute within a **business cycle**, you're able to reduce the amount of code required to develop an enterprise-grade application in Agile Business Suite.

## Business Logic

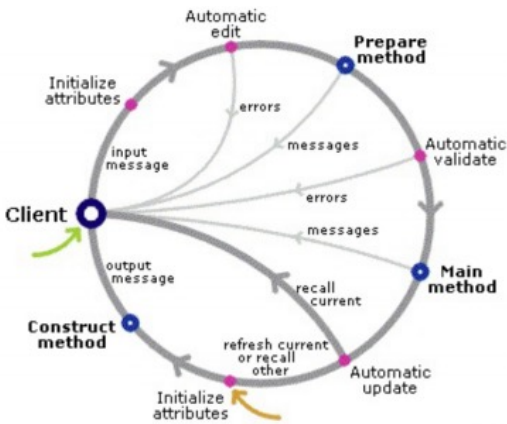
The **business logic** (LDL+) has been designed to allow business objects to interact with each other with minimal operators. Behind the scenes sits a rich library of objects that maintain information as the application is executing. This includes such GLB members as COPY, TOTAL, STATUS, TODAY, PARAM, MAINT, and FINANCIAL.

## DateConvert ToDayNumber GLB.TODAY

The above expression is an excerpt from our Sample.model that stores a relative day number for today's date in the "GLB.TOTAL" attribute.

## Business Cycle

To interact with the AB Suite business cycle, any additional logic is written in three methods – Construct, Prepare, and Main – which automatically execute at particular stages.



These transaction processing stages are detailed below, working clockwise from "Client:"

**Initialize Attributes:** Automatically initializes a range of attributes and readies them for use.

**Automatic Edit:** Automatically validates numeric fields and returns any errors to the client.

**Prepare Method:** Writes additional validation or initialization – such as generating a customer number or recalling another business object.

**Automatic Validation:** Validates record keys, dates, and required fields, tests conditions defined for attributes, and returns any errors to the client.

**Main Method:** Houses user logic, such as checking available stock and confirming a customer's credit limit prior to a sale.

**Automatic Update:** Automatically creates database records for the business object.

**Initialize Attributes:** Automatically initializes a range of attributes and readies them for use.

**Construct Method:** Performs any necessary user logic before presenting the screen – such as pre-filling some of the screen fields with database record values, etc. >>

## Comparison

There are similarities between LDL+ and other languages, such as Python, particularly when it comes to operators, conditions, and looping commands. However, LDL+ requires that fewer lines of logic be written to execute simple tasks, like iterating over a set of customer records in the persistent store.

Executing a similar task in Python would require you to implement the “\_\_iter\_\_()” and “\_\_next\_\_()” methods to your object. But because these behaviors are built into the business objects in AB Suite, you’re able to sidestep this effort and focus more energy on the business process itself.

### Determine Every Cust (CUSTOMER)...

The above example from our Sample.model shows how easy it is to read records from the persistent store of customers.

## Conclusion

Building the AB Suite business objects automatically generates the additional low-level code required to complete the application. As a result, an object that includes little more than the statements above will create over 5,000 lines of C# code.

```
public class CUST_PWB_t : IOISpecKeyIf, ICloneable, IDatatype, IInstanceInfo
{
    public static Guid _InternalClassId = new Guid("8CC093EB-4D97-11EC-841E-...");
    public int privilegeLevel = 1;
    public NGENSample_EQB_t_IF _myOwner;
    bool _hasInterimOwner = false;
    public NGENSample_EQB_t_IF _myComponent;
    public ArrayList MemberList;
    public CLRBaseTable CLRTable;
    public Unisys.AgileBusiness.Persistence.CLRBaseDB ClrHome;
```

Above is a screenshot of the generated code.

*If you're curious to see how AB Suite can help your team develop enterprise-grade applications, please contact your Unisys sales representative today.*



## Looking Back at the 2021 AB Suite User Virtual Conference

Taking place November 9th and 10th, 2021, the 2021 AB Suite User Virtual Conference was special compared to prior conferences.

This year, we ran some very unique, interesting, and innovative sessions – focusing on big-picture concepts, like low-code/no-code development, our strategic roadmap, and more. Utilizing a new online platform, the conference delivered an informative and interactive event that allowed over 150 members of the Agile Business Suite community to learn about the solution's latest developments while freely interacting with both Unisys subject matter experts and their peers.

The event covered a wide range of topics over its two-day run, featuring speakers from around the globe and plenty of Q&A sessions throughout.

Day one began with opening remarks from Charles Lefebvre, Unisys Senior Director of Solution Management for ClearPath Forward®. From there, attendees took part in sessions covering such topics as the challenges that cause testing to slow delivery, and how the automation tools in AB Suite can mitigate these delays. Additionally, the first day examined the modelling and coding features that help to refactor applications for reduced maintenance – and highlighted the new security features that will be available in AB Suite Release 8.0 and prior releases.

The second day began with a joint session, hosted by Unisys and analyst firm 451 Research, discussing the importance of low-code/no-code development and the ways AB Suite addresses these needs. From there, we hosted a “roadmap” session that covered the strategy and plans for future releases, with a focus on enhancing 24x7 availability, low-code/no-code development, and improved connectivity. Attendees were polled throughout on what they feel should be prioritized in future releases, as well.

The day closed with a client use-case presentation and a “Birds of a Feather” session, during which all attendees were given the opportunity to discuss anything related to AB Suite in an open, inclusive, and informal environment.

It was great to engage once again with the AB Suite community, introduce the latest developments we have planned, and discuss the enhancements that will help propel your organizations forward. And a big “thank you” to everyone who took part in the event and helped make it the best attended AB Suite user event we've ever hosted.

*Miss out on the conference? Want to relive specific sessions? Then check out the session recordings [here](#).*



# Performance Testing an AB Suite Application

By Nigel Tunnicliffe, Senior Architect



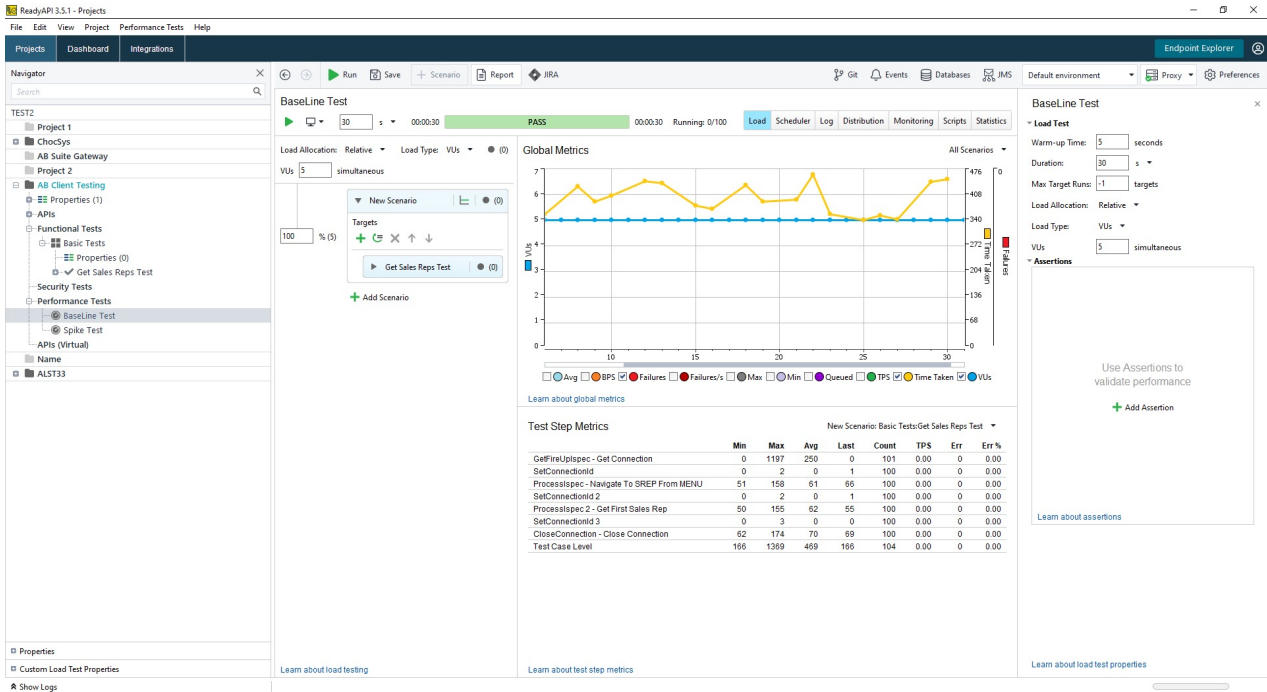
In an effort to accelerate the DevOps pipeline, many Agile Business Suite clients have explored ways to automate performance testing.

Primarily, this means submitting a sequence of Ispc calls and recording the response times using a third-party performance testing tool, such as PostMan, ReadyAPI, or JMeter. These tools typically use a JSON-based RESTful interface to communicate with the system under test, as well as a script that submits a sequence of JSON messages and examines the results.

This allows the AB Suite element of a complex solution to be performance tested in a continuous improvement or continuous delivery pipeline using the same tools as other elements of the system.

An example of such a test is shown below. Here, we're using ReadyAPI to test a repeating sequence of five Ispcs, submitted from five virtual users, for 30 seconds.

Running this test within the DevOps pipeline makes it easy to spot poorly performing Ispcs at an early stage and identify unwanted performance changes tied to bug fixes or new features. >>





## Building the Test Gateway

The example test on the previous page was conducted using a “gateway” application developed by Unisys UK. The gateway provides an interface between the ReadyAPI script and AB Suite application, making it very simple to use with any third-party testing tool that processes RESTful requests.

It also exposes a simple Microsoft WebAPI based JSON interface with any AB Suite application. And it does so without the need for a custom Client Tools generator, as the JSON messages are created and parsed on the fly. Crucially, it will also maintain state in the host AB Suite system between requests from the test script. So any applications that rely on GLB.WORK to maintain state can still use this interface, even though RESTful connections are typically stateless.

```
{
  "ACTMTH": 2105,
  "_TOP_LINE ": "MENU T00000205MAY21",
  "ACTION_LINE": {
    "ACTION": "SREP",
    "GOTOXMIT": "SREP",
    "NEXTSCREEN": "",
    "QUICKGO": "",
    "USERDETAIL": ""
  },
  "CHOICE1": "",
  "CHOICE2": "",
  "CHOICE3": "",
  "WHOAMI": "CHOCSYSIIA on GBMKMCP",
  "StatusLine": "ATTENTION Security not set - displaying MENU",
  "ResponseCode": 100
}
```

And as illustrated in the example to the right, the gateway will also convert “Copy-From” Ispecs into the appropriate JSON-style repeating group, making it easier for JSON-based interfaces to submit the correct request message and interpret the reply. >>

The gateway exposes three unique methods:

- **Connect:** Connects to an AB Suite application and returns the first Ispec message in JSON format.
- **ProcessIspec:** Submits an Ispec request and returns the response in JSON format.
- **Disconnect:** Disconnects from the AB Suite application.

An example of the type of JSON message consumed by the gateway – using the “Navigate to SREP from MENU” request depicted below – is shown in the following example.

```
{
  "ACTMTH": 2105,
  "_TOP_LINE ": "CINQ T00000205MAY21",
  "ACCBAL": "0",
  "ACTION LINE": {
    "ACTION": "",
    "GOTOXMIT": "",
    "NEXTSCREEN": "",
    "QUICKGO": "",
    "USERDETAIL": "GT @ RAT172233211/1"
  },
  "CANCEL OK": "",
  "CREDLIMIT": 0,
  "CSEARCH": "",
  "CUSTOMER": "",
  "Sales": [
    {
      "IN_AMT": "0",
      "IN_DATE": "",
      "IN_DOC": "0",
      "IN_ISPEC": "",
      "IN_PRODNO": "",
      "IN_TIME": "0"
    },
    {
      "IN_AMT": "0",
      "IN_DATE": "",
      "IN_DOC": "0",
      "IN_ISPEC": "",
      "IN_PRODNO": "",
      "IN_TIME": "0"
    }
  ]
}
```

## Addressing a Critical Concern

A key consideration throughout this process is the script you'll use while running the test. While you can build the script manually, this can be a time-consuming and error-prone effort, particularly if the test involves a long, complex sequence of Ispec calls.

That's why the Unisys UK team developed an application that can read the log files created by an AB Suite on Windows application, then automatically create test scripts compatible with ReadyAPI or PostMan from the submitted request messages. Part of an auto-generated ReadyAPI-compatible test script is shown below.

```
<?xml version="1.0" encoding="utf-8"?>
<testCase xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  id="b1d4ad02-bf6a-4641-938a-ed7f81ee44c3"
  discardOkResults="false"
  failOnError="true"
  failTestCaseOnErrors="true"
  keepSession="false"
  name="Station DEMO11."
  searchProperties="true"
  timeout="0" xmlns="http://eviware.com/soapui/config">
<settings />
<testStep
  type="restrequest"
  name="Step 1. Invoke NEW01."
  id="1170c2dc-7dal-4fdf-996a-2f3e1cf59170">
<settings />
<config
  service="https://localhost:44357"
  resourcePath="/api/ABSuite/ProcessIspec"
  methodName="ProcessIspec">
<restRequest
  name="Step 1. Invoke NEW01."
  id="0bcbe434-b19c-4223-8bda-39fc292a1933"
  mediaType="application/json">
<settings />
<endPoint>https://localhost:44357</endPoint>
<request>{
  "ACTMTH" : 2102,
  "INPUT_DATE" : "01FEB21",
  "ISPEC" : "NEW01",
  "SOURCE" : "T",
  "TRANNO" : 1,
  "BACODE" : 1000,
  "DEPCODE" : "UCB",
  "DISP_LIT16" : "System Date",
  "DISP_TEST" : "",
  "GDISP" : "24R1.01.001. Generated on 23 NOVEMBER 2020",
  "MSG" : "",
  "NEWSLINE01" : "",
  "NEWSLINE02" : "",
  "NEXT_SCRN" : "cus68",
  "ST_DATE" : 120418,
  "USER_CODE" : "DEMO11",
  "USERCODE" : "",
  "VERSION" : ""
}
</request>
<credentials>
  <selectedAuthProfile>No Authorization</selectedAuthProfile>
  <authType>No Authorization</authType>
</credentials>
<parameters>
  <entry
```

**One key advantage of this approach:** The settings the gateway needs to maintain state with the AB Suite application are automatically created for each step.

From here, you can import the script directly into the testing tool, simplifying initial setup. You're also free to manually define additional assertions in the script –

such as assigning a specific value to a field or setting a timeframe for a response – as needed.

As a result, you'll simplify and accelerate the process of defining new scripts based on a previously established set of user actions and importing these scripts into a testing tool. >>

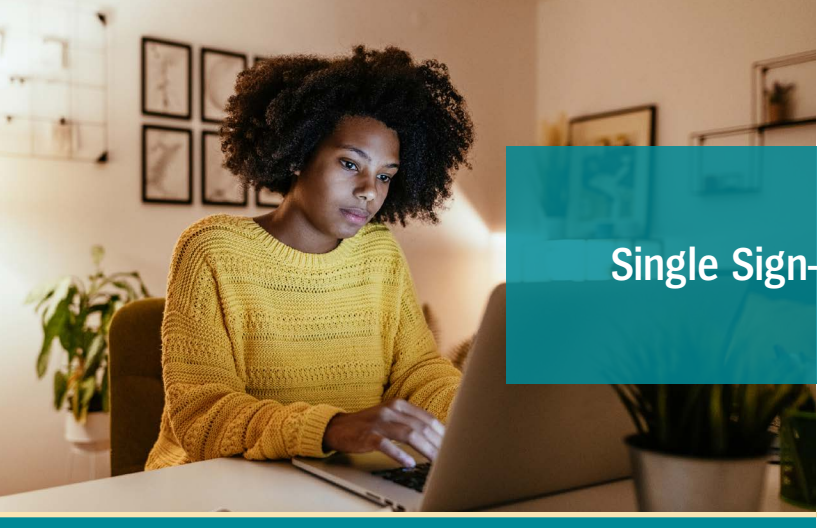
---

## Other Testing Tools

In addition to the performance-testing process described above, you can pair the following testing tools with your AB Suite application throughout the development lifecycle:

- **Automated Testing Tool (ATT):** Part of the AB Suite Developer environment, you can use ATT to unit-test Specs to ensure they return the expected results. With ATT, you'll create a standard C# test project you can run at the appropriate point in the continuous improvement or continuous delivery pipeline. And you can configure the pipeline to "fail" if the tests don't return the expected results.
- **BatMan:** A tool developed by Unisys UK, you can use BatMan to automate system testing and help confirm performance remains stable following a system update. You'll do this by recording a series of Spec requests and responses, then replaying the recorded script to check that the responses in the new version of the system match the original.

*For more information about performance testing your AB Suite applications, and the tools that can help you along the way, please contact your Unisys sales representative.*



# Single Sign-on and AB Suite

By Gary Taylor, Senior Architect



Even as proprietary and commercial single sign-on (SSO) solutions flood the market, nearly all are built around a common theme: trust.

In the simplest sense, this trust takes the form of a token that's exchanged between users and the applications, services, etc. they wish to access. It's validation, confirmed by the SSO solution, that these users are who they say they are and can access – and move freely between – any resources that accept that token.

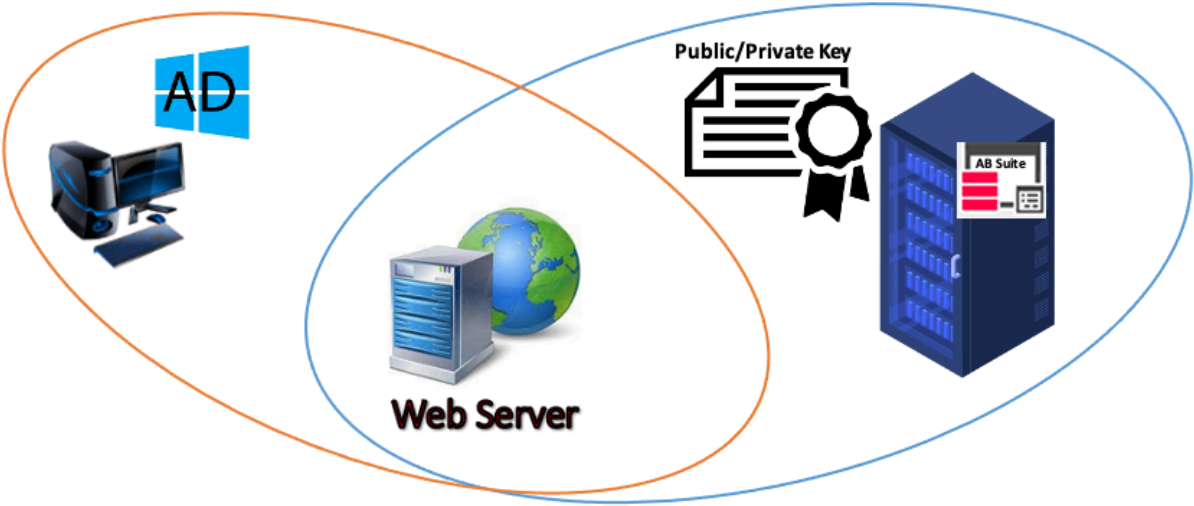
So, if we want to establish SSO in the Agile Business Suite environment, we must first create something that can be trusted, such as a security certificate. Sharing that certificate between each end of the user-resource communication establishes the basis for our SSO solution. Then, we'll need to write code that creates a token from the security certificate – and uses the same certificate to decrypt that token.

## Bringing SSO to Life

Drawing on these basic principles, we were able to create an SSO solution for a UK-based client.

Specifically, this client wanted to simplify the login process for its end users, while also eliminating the need to manage IDs and passwords in multiple locations. The SSO solution had to work with EAE and AB Suite, in both the ClearPath MCP and Windows environments, as well as with all existing product features. And for auditing purposes, the client needed the ability to identify individual end users.

Given that the client's application was built around ASP.Net talking to a Windows IIS web server – both of which reside in the same Active Directory – we could establish trust via a single security certificate. >>



## How it Works

The first step was to create an external library that allowed us to encrypt and decrypt messages using the certificate's public-private keys. These would then be called from the AB Suite application and ASP.Net code running on the web server. Because the Windows and MCP environments can programmatically access certificates and encryption capabilities, we were able to develop two libraries, one written in .Net for use in Windows and another written in Algol for the MCP environment.

Several factors proved key to making this approach work: we could use standard Client Tools capabilities, the message was passed via a standard field, and nothing special was required other than the external libraries. Also, the solution did not place any additional constraints on the client or host. Finally, it provided a framework to easily add a different type of trust, should one be required, by simply changing the external library.

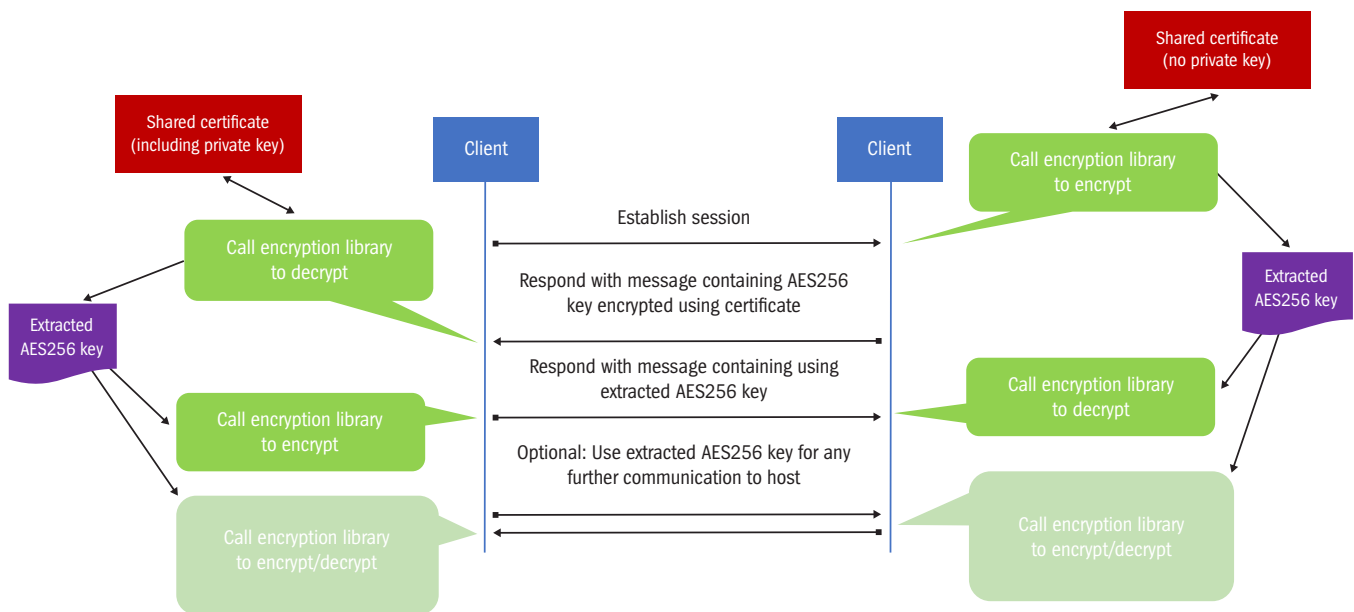
### The SSO solution utilizes the following logic flow:

1. At the AB Suite level, we created a new Ispec that's called by the ASP.Net client.
2. The Ispec's "Construct" logic calls the external library to create a basic token from the certificate's public key. This message is wrapped as a BASE64 string,

which allows it to be sent via – and placed in – a standard on-screen field. The message includes a randomly generated AES256 encryption key, as well.

3. At the ASP.Net level, the code reads the value off the screen, calls the external library to use the private key to decrypt the message, and retrieves the AES256 encryption key.
4. The AES256 encryption key then encrypts a reply token, including a timestamp and user ID, places it in the same on-screen field, and sends the data back to the host.
5. At the host, the reply is decrypted, which validates the user ID and grants access to the application. Also, to prevent spoofing of messages, the time stamp is examined and the message rejected if it falls outside definable parameters, such as more than "n" minutes old.

Further, to eliminate the need to provide host-level credentials, a RATL VIEW with a predefined user was created for the ASP.Net sessions. This meant that at the application level, we're unable to use GLB.USER. Rather, the LDL+ code populates a field that's part of GLB.WORK, with the user ID in the message returned from the ASP.Net host. All existing references to GLB.USER were then updated to use this GLB.WORK field.



*If you'd like to learn more about SSO, or explore implementing an SSO solution in your organization, please contact your Unisys sales representative.*



## Info Center

New additions to our libraries of How To documents, white papers, and other useful information include:

- **How To:** Use Debugger as a Normal User **(Updated)**
- **How To:** Clone an AB Suite Model Database **(Updated)**
- **White paper:** Using Public Model File **(Updated)**
- **White paper:** CSV Files in AB Suite **(NEW)**
- **Support Documentation:** AB Suite 8.0 Software Qualification and Support Matrix **(NEW)**
- **Support Documentation:** AB Suite 7.0 Software Qualification and Support Matrix **(Updated)**

To view these and other resources, simply go to [public.support.unisys.com](http://public.support.unisys.com) and choose “Documentation” in the “Public Information” box located on the left-hand side of the screen. No special login is needed.

We also encourage you to view the list of available [AB Suite training courses](#). A blend of instructor-led and computer-based trainings, these educational resources

include graphics, interactivities, simulations, and demonstrations with voice-over narration.

To stay up to date on the latest happenings in the ClearPath Forward world, please [subscribe](#) to the ClearPath Forward Connection newsletter.