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Developing Agility

The Quarterly Newsletter for Unisys EAE and Agile Business Suite Clients

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It's All Right Here

By Steve Koss, Distinguished Engineer and Global Team Lead, Product Services Solution Office, Unisys

The world is moving fast.

Things move so quickly, in fact, that we rarely have time to simply stop and think. But pausing for a moment or two can be important: it gives us an opportunity to take stock, to consider the choices we've made and the value we're getting from these decisions.

And when you're running Enterprise Application Environment (EAE) on the ClearPath® MCP operating environment, pausing and taking stock means considering just how rock-solid the investment you have in place truly is. From performance and reliability to security and simplicity, the MCP operating environment delivers a suite of attributes you simply won't find elsewhere.

As with nearly everything today, performance is king. And with EAE on MCP, you know you're getting the high-volume transaction processing you need to help the business meet rising internal and external demands. You can even tap into extra power as needed, making it possible to address sudden spikes with ease.

Because the MCP environment supports so many applications at once – and can update from release to release rapidly – you're able to limit downtime and avoid the negative impact it has on your business.

Plus, with the Enterprise Database Server for ClearPath MCP (DMSII) database, you know you're protecting the integrity of the data your applications access and transmit every day. **>>**

Developing Agility

With high levels of resiliency, the ability to audit transactions, revert changes if needed, and store data using less space, the DMSII database is enterprise-class in every sense of the term.

And of course, security remains a paramount concern. But with EAE on MCP, you're running a highly secure operating environment with no record of user data breaches, giving you the confidence to expand your application portfolio and take on more workloads while limiting risk.

Pulling this all together is the support you receive from Unisys. No matter if you experience an issue in the operating environment, development software, or hardware it all resides on, you know we'll be there to help you identify and fix the problem – without resorting to workarounds or promising to address it in a later release.

This wealth of capabilities – and many, many more like them – are made available only through the unique, powerful combination that is EAE on MCP. There's really no reason to look anywhere else.

Upgrading but not Moving

That idea goes double when you upgrade to Agile Business Suite (AB Suite®).

Making the move to AB Suite enhances and extends what you're doing in EAE today. And by keeping the MCP operating environment a constant, you'll be able to appreciate the benefits AB Suite delivers much faster than if you switched platforms at the same time.

That's because upgrading to AB Suite on MCP enables you to transition over all of your applications – as well as the various processes behind them – without rebuilding anything.

While avoiding the associated effort, cost, and risk is great in its own right, doing so also means you'll have more time to focus on what Object-Oriented programming concepts, the Microsoft® Visual Studio® interface, and Microsoft Team Foundation Server (TFS) integration can do for your business.

And you'll be quicker to market as a result. But there are even more reasons to stay on the MCP environment as you transition to AB Suite.

Embracing a New Era

Running AB Suite on MCP puts you in a prime position to capitalize on IT's new application-centric era.

As applications increasingly become the differentiator, companies are less tied to hardware than they once were. Instead, they're prioritizing their infrastructures based on what enables these assets to deliver the most value to the most people in the most places.

And with the ClearPath Software Series and its software-only deliverables, we've readied the MCP environment – and AB Suite – to support and enable this application-centric mindset.

With the entry-level ClearPath MCP Bronze and Silver Software Series products, you can run the MCP environment on applicable x86 infrastructures or VMware® vSphere® and Microsoft Hyper-V® hypervisors. You'll have the freedom to develop what you want when you want, regardless of the hardware you use to get there.

This way, you can take the applications you have running on your ClearPath Forward™ system today and seamlessly incorporate them into the rest of your infrastructure – whether it's as part of a private cloud, virtual environment, or software-defined data center. You'll transform the environment into a fluid software stack – containing operating environment, database, transaction manager, and application environment – without foregoing the proven attributes you've come to rely on.

What's more, you can use ClearPath MCP Developer Studio, another Software Series product, to empower full teams and individual developers to work simultaneously within a single system, increasing agility and flexibility while shortening the time required to push new capabilities into production. **>>**

And as you transition to this application-centric, software-only, hybrid-cloud world, you won't have to worry about jeopardizing the safety and integrity of your critical applications and data.

With the Unisys Stealth® security portfolio, you'll be able to micro-segment your network in a manner that isolates applications while allowing them to freely communicate without exposing the data used in those communications. With Stealth, you can obscure endpoints from unauthorized parties and tighten access control by switching your focus from physical devices to user identities.

When you protect data in motion to this degree, you'll feel confident knowing that you're providing the same isolation you're accustomed to – without restricting your organization's ability to play an integral role in today's application-centric world.

Why Stay?

Sometimes, there's value in sticking with what you know. And when "what you know" is the MCP environment, that value is immense. And it will only grow as the environment continues to evolve and become even more robust.

No matter if you're using AB Suite already or planning your EAE to AB Suite upgrade, running these solutions in the MCP environment gives you a wealth of capabilities that simply can't be rivalled by any other platform.

Whether you need to process a high volume of transactions, make your database environment more scalable, embrace cloud-centric operations, or virtually anything else, it's all right here. And it's all ready and waiting to help you, your applications, and your business do some great things.

Engineering Corner: Unleashing the Power of the AB Suite 6.1 Code Editor

By Fred Heida, Senior Software Engineer, SME System Modeler, Unisys
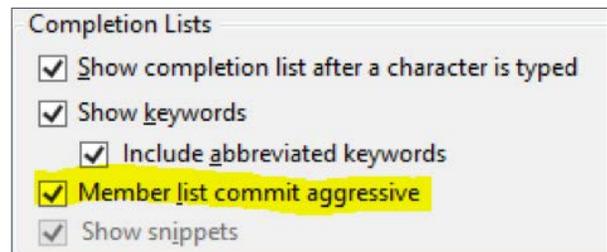
Writing and reading code is part of every Agile Business Suite developer's job. That's why it's crucial that you understand how the AB Suite Code Editor can help you write that code in the most efficient way possible. In AB Suite 6.1, we redesigned the Code Editor and fully integrated it with Visual Studio, providing a number of powerful new features.

When writing code, it's smart to think of yourself as a craftsman. After all, the tools you work with play a big part in determining the quality and efficiency of the code you write. So let's examine a few useful tools and see how you can activate and even fine-tune them through the Tools>Options> Text Editor dialog.
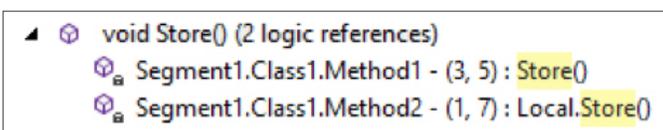
Commit Aggressive

Auto-completion just got faster. Part of Intellisense, this option commits the selected suggestion with one of the special characters that appear at the end of your selection: {}[]().,:=-+*\&<>. This is very handy for qualified attributes, arrays, and methods.

Completion Lists
- ☑ Show completion list after a character is typed
- ☑ Show keywords
  - ☑ Include abbreviated keywords
- ☑ Member list commit aggressive
- ☑ Show snippets

Find All References

Not new to AB Suite, but recently enhanced to work with members of the framework. For example, persistent classes would extensively use the built-in Store() method. Now you can ask where this method is used on all instances of this class. For those unfamiliar with this option, it's part of the right-click popup menu and acts on the selected text. >>


```
▲ ◉ void Store() (2 logic references)
    ◉ₐ Segment1.Class1.Method1 - (3, 5) : Store()
    ◉ₐ Segment1.Class1.Method2 - (1, 7) : Local.Store()
```

Peek to Definition

Need to take a quick look at another method? By using Peek Definition, located in the context menu, you can view and edit the invoked method without navigating away from your current location. It's a concept similar to expanding an Insert statement, but with the added benefit of working with the full Code Editor experience. The image below shows the Peek Definition window for the method named PopulateScreen().

The best part is, you're not limited to one peek per logic. You can have multiple peeks all active for the same logic – and even drill down to peeks within peeks.

Format Document

Distracted by different coding styles throughout a method – be it commands defined in mixed case or a mashup of abbreviated and standard naming conventions? Without consistency, the logic becomes harder to read and keep clear of mistakes.

If this happens, use the Format Document option, one of the advanced settings in the Edit menu, to automatically change the logic to conform to the Command Style settings. This will apply to any new logic, including logic you copy and paste.
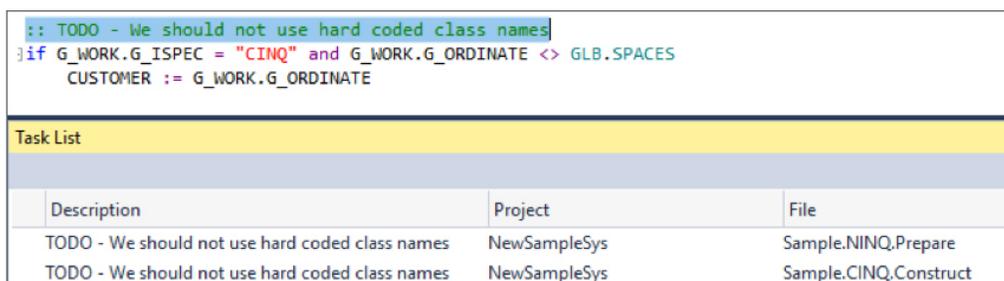
```
DW (CustomerId <> glb.spaces)
    LU CustomerId Cust
    MV Cust.Nam Nam
END
FOREACH Customer IN Cust
    ListEntry.Name := Customer.Nam
    ListEntry.Id := Customer.CustomerId
    this.Customers.Add(ListEntry)
END
```

Keep Track of the Changes

Want to see what lines of code you changed since the Code Editor opened? The Code Editor keeps track for you: a yellow bar on the left-hand margin shows changes made since the document was opened, but not saved. It will turn green after you save your changes.
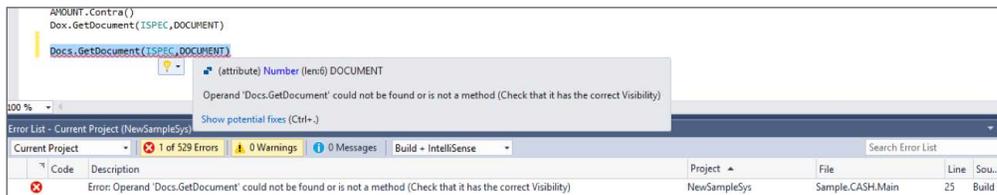
Task List

It can be convenient to include "ToDos" in your comments – but even easier to forget to come back to them. Now you can use the Task List in the View menu to keep track of these coding reminders. >>
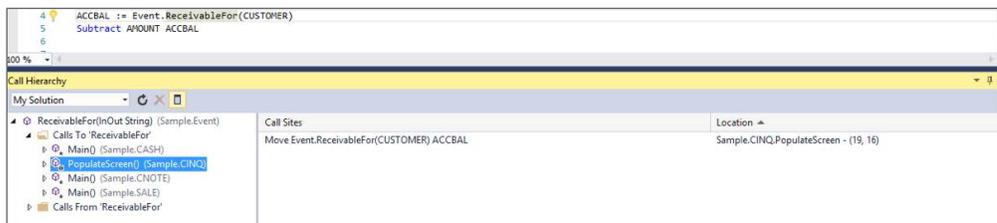
Dynamic Validation

Mistakes happen, and catching them early can save time. With Dynamic validation turned on, a red squiggle will appear as soon as you make a coding mistake, alerting you to errors in real time. This way, you won't have to wait until validation to discover the error.

If you hover over the squiggle, you'll see additional information about the error. A light bulb may also appear with suggestions on how to fix it. The Editor provides suggestions for undefined variables and automatically creates them for you, with the correct type, of course. Alternatively, it shows names that are a close match in case of a typo.
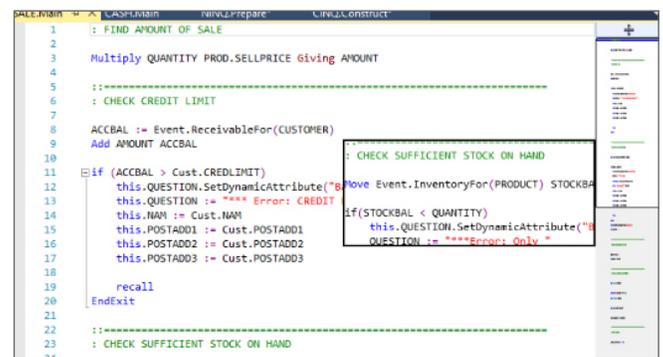

Call Hierarchy

The Call Hierarchy view enables you to navigate through your code showing all calls to and from your selected method. Similar to the call stack in the Debugger, this is a design-time view of all possible execution paths. You can invoke it in the View Call Hierarchy context menu to see the methods that call, and are called by, the highlighted method.

Scroll Bar Map Mode

The scroll bar has two modes: The default bar mode, which only displays annotation indicators on the scroll bar, and map mode. Map mode represents the lines of code on the scroll bar, and when you click a location on the scroll bar, the cursor moves to that location in the code.

Syntax Coloring

Want to see if a token is an attribute and not a variable, or method and not a profile? With the new Code Editor, you can set a different color for every element kind used in the code, including variables, attributes, methods, and profiles. This way, you can distinguish between them as you read your code.

The features described in this article are but a small sampling of the many new and exciting capabilities in the latest version of the Code Editor. We encourage you to try them all today! And if you have questions, suggestions, or comments, please reach out to fred.heida@unisys.com.

AB Suite Application Performance Tuning

It's never good news to hear one of your applications is experiencing a performance problem. Though you certainly recognize the importance of fixing it, knowing where to start isn't always easy.

With help from some Unisys UK technical specialists, we've outlined a general approach that should help you identify, fix, and avoid these issues in your environment:

1. Set a performance target
2. Identify the problem area
3. Analyze the code
4. Implement the code changes
5. Test and repeat

Set a Performance Target

This is a critical first step – even though it's often an afterthought, or worse yet, not clearly defined. This lack of clarity typically stems from an imprecise problem definition, such as "XYZ report needs to run faster." That's why it's important to request a more clearly defined target, such as "XYZ report needs to run against the Month End in less than four hours."

Though it may sound simple, setting a clearly defined, measurable goal will make it easier to determine when your work is done.

Identify the Problem Area

With a clearly defined target, the next step is to discover the source of the problem. When trying to identify a problem's source, start with some simple questions:

- When did this problem start?
- Has it been getting worse over time, or did it start after a particular release or feature was introduced?
- Has anything else – IC level, new patch, MCP update – changed?

Pausing to consider these questions often gives you an idea where to start your investigation.

Assuming the source of the issue isn't related to something like a new piece of code, how do we work out what's causing poor performance? You could try to find the answer by adding trace or diagnostic code to the LDL+ code. While this may help, doing this for a large report or piece of the system that includes many methods can be difficult and time consuming.

This is where Unisys can help. Working with clients on several recent engagements has allowed us to identify some alternative approaches.

In the MCP environment, we've developed a process that allows you to gather statistics about the code execution. You can implement it without introducing any LDL+ changes, and easily enable and disable it as required. The output shows which modules and areas of code are used, as well as the frequency of their use. >>

If you use AB Suite on Microsoft Windows®, and therefore utilize Microsoft .NET for the generated runtime code, you'll be able to employ standard Microsoft instrumentation capabilities, such as the Microsoft .NET profiler. With these capabilities, you can see which parts of the compiled code have been accessed. Although this will not directly relate to objects at the LDL+ level, Unisys has developed an approach that allows us to correlate the output so you can see which methods, Ispecs, and attributes have been accessed.

While each of these approaches are relatively simple, the real skill lies in analyzing the results. In both cases, we recommend engaging with Unisys consultants to take advantage of the knowledge we've gained from multiple client engagements.

Analyze the Code

Now that you have some idea of where the problem is, the next step is to analyze the code. One option is to go into the AB Suite environment and look at the code. An experienced developer may be able to identify the problem code using the information gathered in the previous step.

However, this is another area where Unisys experience may help. Our UK team developed a powerful query tool called Model Analysis Tool for Research, Investigation, and XREF (MATRIX). An enhanced version of the XREF utility, MATRIX provides query capabilities beyond those in AB Suite Developer. Some key capabilities in the current MATRIX 2.0 version include:

- Method logic flow, which allows you to create a simplified view of the logic showing just method calls, conditional statements, and loops
- Compound searches – and, or, not, starts with, does not start with
- Automatic "where type" and "where name" inheritance usage displays
- Find all statements that update or read a particular Structure
- Find all attributes that have a particular definition
- Find usage of an attribute globally or within a method, report, or Ispec
- Export results to tables and CSV files

Implement the Code Changes

The next step is to implement the required code changes. If these changes only affect a few areas, this can be done via the normal development process. However, if the code changes are much wider in nature, then it may be worth enlisting Unisys assistance.

The pModel capability in AB Suite lets you extract LDL+ logic and definitions in plain text, and can be used to automate code changes. This automation could be as simple as just renaming a field and its references throughout the source. Or, it could be more complex – something like including a reference to a new method or inserting a new piece of LDL+ code into every report.

As part of a recent client engagement, we developed a custom tool to automate changes to the pModel export file. While the tool was specific to this particular engagement, we could easily adapt it to other scenarios.

Test and Repeat

The final step is to test the changes to confirm the performance goal has been reached. If you don't see the desired results, go back to step one and look for further areas to improve until you reach your goal.

What's Next?

If you're eager to learn more about anything discussed above, we encourage you to engage with Unisys for a pilot project. For further information, please contact your local Unisys representative or reach out to one of this article's contributors directly by emailing: gary.j.taylor@unisys.com, andy.wardle@unisys.com, or nigel.tunnicliffe@unisys.com.

Special thanks to Unisys UK System Architects Gary Taylor, Andy Wardle, and Nigel Tunnicliffe for drawing on their many combined years of experience with LINC, EAE, AB Suite, and associated products to create this article.

EAE, TFS, and AB Suite:
An Upgrade Success Story

Every now and again, a choice you have to make opens up a whole new world of unseen possibilities. That's precisely the situation one of our clients recently faced.

A leading unemployment insurance agency, this long-time Unisys client helps residents find suitable, sustainable employment, works with businesses to recruit qualified candidates, and administers unemployment benefits programs.

An EAE user for many years, the agency faced an inflection point back in 2015: with support for the existing EAE source control tool ending, the company knew it needed to locate a replacement fast. The agency found it in Microsoft Team Foundation Server, and enlisted Unisys Services team to put the new capability in place.

We worked with the client to organize a three-day onsite EAE Version Control Workshop to provide initial training for using TFS in the EAE environment, including how to use TFS to manage source control.

Then, we showed the client's developers all the ways to use TFS, defined the new processes they'll follow, and outlined the steps needed to release changes.

Following the workshop, we provided support throughout the implementation, as well as off-site consulting services designed to help the agency get the most from TFS and EAE.

Only the Beginning…

As the agency familiarized itself with everything it could do with TFS, it had a bit of a revelation: while TFS provided plenty of valuable capabilities for the EAE environment, there was even more it could do when paired with Agile Business Suite.

Because of this, the agency decided the time was right to upgrade from EAE to AB Suite – and asked our services team to guide them through the upgrade process.

The project started with the EAE to AB Suite Assessment service, an engagement that helped the company uncover and address any areas requiring special attention during the upgrade.

Following the assessment, our consultants worked closely with the agency's developers to make sure they understood the key differences between the EAE and AB Suite environments. We then organized a four-day onsite AB Suite Version Control Workshop that provided initial training on AB Suite and TFS.

Last, but certainly not least, came the upgrade itself. During the upgrade, we helped the agency's team install, configure, and test the new AB Suite software – and verify that the environment met the requirements of its new AB Suite solution. Onsite mentoring and support, aimed at ensuring a smooth transition from implementation to production, rounded out the upgrade process.

Completing the move to AB Suite enabled the agency to bring rich, new capabilities to market with the speed a rapidly changing industry demands. And by drawing on the Unisys Services team's extensive expertise, the company was able to move to AB Suite in a smooth, efficient manner – without overtaxing scarce internal resources.

Need help with an EAE or AB Suite project? Looking to plan your EAE to AB Suite upgrade? Contact your Unisys sales representative to get started. Or, check out the ClearPath Forward Services homepage for additional information.

Info Center

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

- **How To:** Enable Model Extensions in AB Suite 6.1 (**NEW**)
- **How To**: Process XML in AB Suite (**NEW**)
- **How To:** Use ATT with Messenger Client (**NEW**)
- **How To:** Set NLS_LANG Environment Variable to avoid DBMigrate Oracle Unicode Conversion Problems (**NEW**)
- **How To:** Use Automation Utility for Ngen.exe (**NEW**)
- **How To:** Team Foundation Build DevOps Support for Windows (**NEW**)
- **How To:** Use Registry Keys with Windows Runtime (**Updated**)
- **White Paper:** Model Extensions for AB Suite 6.1 (**NEW**)
- **White Paper:** Use of AB Suite 5 Windows (.NET) Runtime with Microsoft Windows Server 2012 R2 Failover Cluster and SQL Server 2014 (**NEW**)

We've released the Agile Business Suite 4.0 Discontinuance Announcement and updated the "Software Qualification and Support Matrix" documents for AB Suite releases 4.0, 5.0, and 6.1.

To view these and other resources, simply go to 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.

In addition, there are several pieces of thought leadership available on the AB Suite homepage:

- AB Suite in the Application Lifecycle
- Agile Development with Agile Business Suite
- Unisys Agile Business Suite: Capitalize on Change, Don't React to It

Please be sure to visit the ClearPath Forward Client Education homepage to view the AB Suite Course Catalog and other helpful education and training resources.

To stay up to date on the latest happenings in the ClearPath Forward world, please subscribe to the ClearPath Forward Connection™ newsletter.

If you're looking to explore AB Suite on an evaluation basis, please download AB Suite Express today! This free download includes the full AB Suite package – AB Suite Developer and AB Suite for Windows Runtime – as well as a "getting started" course designed to help you begin exploring everything AB Suite has to offer in no time.

And to learn about everything the ClearPath Forward Services portfolio has to offer, please check out our brochure, eBook, and high-level video.