

# ClearPath Forward® CONNECTION June 2018

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MCP

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## On the Road to the Cloud

By Chuck Lefebvre, Senior Director, ClearPath Forward Product Management, Unisys



Every innovation, every new strategy, every change we've made to ClearPath Forward® environment over the last 15-plus years has been building to this point.

When we transitioned from proprietary hardware to an all Intel® chipset, we weren't just breaking new ground in the area of performance, or sustaining proven, high levels of security. We were emphasizing flexibility and standardization, reimagining the environment in ways that aligned with the day's most prominent business and IT concerns.

More importantly, we also set the stage for what you see today: A version of the ClearPath Forward environment that utilizes its consistent, ever-evolving firmware layer to run on a variety of compatible hardware and hypervisor platforms. In doing so, we're adding freedom of choice to the environment's core principles.

So whether it's the ClearPath® MCP Bronze, Silver, or Gold products – or the equivalent offerings we'll soon be releasing for the ClearPath OS 2200 environment – you now have more ways to leverage the proven ClearPath Forward attributes than ever before. And, as we take these offerings to the next level, you'll have even greater power and capacity at your disposal.

More importantly, taking advantage of our efforts to standardize hardware, provide flexible deployment options, and empower you with choice means you're ready for the next step in this journey: A ClearPath Forward environment that is built for private and public cloud deployments.

### The Foundation is Set

The foundation we built means the ClearPath Forward environment is positioned for virtualization and the cloud. But what it doesn't mean is that getting there requires you to embark upon a complicated, lengthy, risk-intensive migration project. >>

We're handling much of that work for you, helping to make sure the security, availability, and high-transaction-volume processing attributes you rely on remain in place as your ClearPath Forward software stack executes in a variety of hardware, virtualization, and cloud environments.

As a result, you'll be able to make a smooth, seamless transition to virtualization and the cloud. Just as you did when moving from proprietary hardware to an all Intel® infrastructure and on to a software-based delivery model, you can transition your core apps into the cloud without change. The system of record that powers so much of your business will remain as it has been for years. It will simply reside in a different location.

But we don't want to stop there.

Clients tell us one of the aspects of the cloud they find particularly appealing is the ability to connect their systems of record with systems of engagement and other cloud-native apps. So we'll be focusing significant attention on our middleware – and RESTful APIs and hosting technologies in particular – to facilitate this next level of integration.

We're also happy to see early adopters have already engaged with this approach, and are pushing us to extend our capabilities further and further. It's a great sign. It shows the decision to shift in this direction was the correct one. And it confirms we're heading down the right path.

## Making it All Possible

This transition to the cloud is undoubtedly a big step. It's a monumental change – and certainly one that might leave you wondering how we plan to make all this possible.

This is a natural question to ask, especially given how many pieces there are to coordinate as the ClearPath Forward environment moves into a much more open, much more fluid arena.

The simplest answer is, rather than attempting to facilitate the transition entirely on our own, we plan to work with proven leaders in the space to bring everything together. For instance, VMware® will play a significant role in this transition, as they've already built much of the “connective tissue” into the public cloud.

Similar to how we worked closely with Intel® when we standardized our hardware platform, we'll leverage our partnerships wherever possible, too. In most cases, this will mean working with leading software infrastructure vendors that have a track record of success in the cloud. But we also plan to carefully review and select open source providers, then add enhancements to their offerings in order to deliver the business-critical, enterprise-class characteristics your ClearPath Forward environment demands.

We'll listen to – and learn from – our clients. Hearing what you've experienced as you make this transition, and then validating those experiences against what's happening in the broader market, will prove essential. It's how we'll create a synergy between your goals and the strategies we create to ready the environment to address tomorrow's needs.


And as you progress along this journey, we'll be there with consulting services to help you seamlessly bring together your ClearPath Forward environment with the flexibility and standardization offered by virtualization and the cloud.

With this strategy in place, our aim is clear: Build on what made the ClearPath Forward environment a cornerstone of your business and IT operations, and use these qualities to chart a course into exciting new territory.

The future is unfolding before us.

## Meeting You All Again for the First Time

To many of you, my name may not be new, but the title will certainly look unfamiliar. After years as part of the ClearPath Forward engineering leadership team, I have moved into a role overseeing all ClearPath Forward product and portfolio management. This is an exciting opportunity and an exciting time to take it – we have big plans for the portfolio, and I look forward to sharing in this journey with you all.



## AIS 4.1 Adds New ClearPath Call Out Services Feature

When you use the [ClearPath Application Integration Services \(AIS\) tool](#), you'll make it incredibly easy for your team to create cross-platform applications that blend proven ClearPath Forward attributes with the familiarity of the Microsoft® Windows® environment.

This goal – a simple, seamless, cross-platform development environment – remains top of mind as we work to update and extend the capabilities in AIS. And with the release of AIS 4.1, we've added an exciting new feature that brings more freedom and flexibility to the tool: ClearPath call out services.

With this new feature, you'll be able to call out to web services and easily enhance your existing applications with new capabilities – without having to move them to another platform.

### How it Works

The ClearPath call out services feature maps a web service or .NET DLL call into something that looks like a procedure call. So as far as your ClearPath Forward program is concerned, it's actually making a routine call into an external library.

Meanwhile, the infrastructure behind the scenes calls into a .NET DLL, which can convert between a format that is compatible with the ClearPath Forward environment and one that's needed for commands to, and responses from, a web service.

At runtime, your application “sees” a proxy generated by a Unisys provided program. The proxy looks and behaves like an ordinary piece of external code – you call it, it returns a result – but the infrastructure results in a function within a .NET DLL being called.

It's then passed through the parameters the calling program provides, converted into a .NET compliant format, and returns results to the caller that are converted back to a ClearPath Forward compliant format. The call uses an authenticated connection you have the option of encrypting, so the data that's passed each way is both protected and confidential.

The use of a customized DLL makes calling web services easier by tailoring the web service interface to match the expectations of your ClearPath Forward application. For example, while a web service might return a JSON encoded list of objects, it's likely that the corresponding ClearPath Forward COBOL structure is a simple array of records with an OCCURS clause.

Here's a common use case: Imagine your application needs to utilize a feature that's easily accessible from .NET, such as SOAP-based web services. By providing the .NET DLL as a “bridge,” the ClearPath call out services feature makes it possible to use .NET capabilities right in your ClearPath MCP or OS 2200 environment – with minimal specialized programming knowledge required. As a result, you'll find it easier to utilize core ClearPath Forward attributes as you take advantage of .NET capabilities and more readily available programming skills.

### Generating the Interface

In the ClearPath MCP operating environment, the connection endpoint is an individual application – either a batch application or a COMS TP – from which the user credentials will be inherited. For OS 2200 environments, the connection endpoint is the AIS subsystem, with programs making individual method calls using a connection pool. >>

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The .NET DLL to be called is specified by the program – it's likely a default provided by the generated proxy – and isn't expected to change for the life of a connection. Because each MCP endpoint is owned by an application, it can make multiple calls and retain state between them. Idle connections won't be reused, however, because they aren't shared by other application instances. Because OS 2200 programs make individual calls through a pool of connections, they may not retain state in called methods. But they won't bear the overhead of individual connections.

*To learn more about the ClearPath call out services feature, please refer to the “Application Integration Services Server Installation and Programming Guide For ClearPath Call Out Services” documentation on [the support site](#). And if you'd like some help putting this feature to use in your organization, please contact your Unisys sales representative today.*

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## **Book Your Travel: UNITE 2018 Is Scheduled!**

We're thrilled to announce that the 2018 UNITE Conference, the annual meeting of the International Unisys User Association, has been scheduled for September 17-19, 2018.

Building on a successful 2017 conference, this year's event is titled “Transforming IT to a Secure Hybrid World,” and will focus on guiding your IT evolution using cost-effective and secure virtual, hyper-converged, and cloud technologies.

The conference will be held just outside of Chicago, at the [Hilton Oak Brook Hills Resort and Conference Center](#) in Oak Brook, Illinois. Join us in September for updates on the latest capabilities, some great networking opportunities, and maybe even a few tips and tricks to optimize your environment. Please visit the [UNITE website](#) for updated conference news and information.



## Visual Flair: Using Custom Images in Operations Sentinel

With Operations Sentinel, our end-to-end data center management tool, you can automate, consolidate, access, monitor, and manage the resources that define your IT environment: Your ClearPath Forward system. Virtual tape libraries and disk subsystems. Windows, Linux®, and UNIX® servers. SAN switches and even network-connected printers.

And you can do it all through a single point of operation.

But sometimes, you want to know only the most important, most impactful information and metrics, like a change in state or the current status of a system that supports your ClearPath Forward application.

Well, the good news is, there's an easy, clear, immediately actionable way to get this information across in Operations Sentinel: the Operations Sentinel Autoaction Message System (AMS).

With AMS, you can display the state of an object using a simple, intuitive visual, lending more prominence and impact to critical metrics than what is displayed on a console or read from a log. The visual change – whether it's illustrating the expected completion of a DR test or highlighting an unforeseen event – is easy to spot and can quickly trigger users to drill down and investigate the situation.

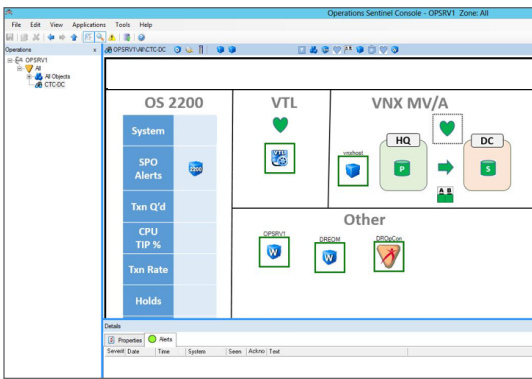
### Putting AMS to Work

Using images with AMS utilizes existing features in Operations Sentinel. While there are many images already in the product, you can import custom images using PNG, JPG, and other industry-standard file formats. You can even create them yourself.

Once the image has been imported, you'll need to write some simple AMS code – CP-AMS for OS 2200 systems and SP-AMS for other systems – to associate it with a monitored object. The AMS code will need to match a message, and then an Attribute Change event report (AC E-R) using a TopologyImage attribute-value pair will perform the change. For more details, refer to the [Operations Sentinel Autoaction Message System Administration Guide](#).

Below is some sample code illustrating such a change. Here, we're changing the object "VNX" of class "Probe" to associate the "Probe\_R" image with the object. Once Operations Sentinel processes this action, the image will be changed on all consoles. >>

```
DEFINE "VNX_Probe" 2
MESSAGE "VNX_Probe Off"
TOKEN KEYWORD 1 "VNX"
TOKEN FIXED 2 "Probe"
TOKEN FIXED 3 "Off"
/* Check if already active */
if VNX_Probe = "OFF"
ACTION EVENT-REPORT "TYPE=AL|CLASS=Probe|INSTANCE=VNX|\" \
"appl=VNX|sev=informational|alertid=VNX_Probe_2|text=VNX_Probe not active."
ACTION EVENT-REPORT "TYPE=AC|CLASS=Probe|INSTANCE=VNX|\" \
"Message=\\_DT (3,4)\\_DT (1,2)\\_DT (5,6)\\_DT ( ) 2\\ : Probe already off!\" \
"Status=Probe Off|\" \
"TopologyImage=Probe_R"
ACTION EVENT-REPORT "TYPE=LG|CLASS=Host|INSTANCE=\\LogName|APPL=VNX|\" \
"APPLQUAL=VNX_Probe_2|TEXT=VNX_Probe not active."
else
set VNX_Probe = "OFF"
ACTION EVENT-REPORT "TYPE=AC|CLASS=Probe|INSTANCE=VNX|\" \
"Message=\\_DT (3,4)\\_DT (1,2)\\_DT (5,6)\\_DT ( ) 2\\ : Probe turned off!\" \
"Status=Probe Off|\" \
"TopologyImage=Probe_R"
endif
ACTION EVENT-REPORT \" \
"TYPE=LG|CLASS=Host|INSTANCE=\\LogName|APPL=VNX|APPLQUAL=VNX_Probe_2|TEXT=VNX process not running: \\MESSAGE\" \
END
```

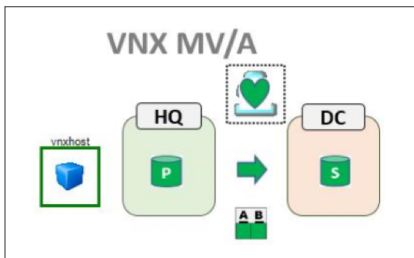


## AMS in Action

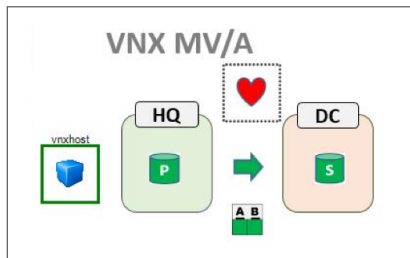
Here are several examples of how our clients have created custom alerts in Operations Sentinel.

The client in this first example uses Operations Sentinel to manage, monitor, and automate their OS 2200 system, virtual tape library, replication software, and various Windows servers.

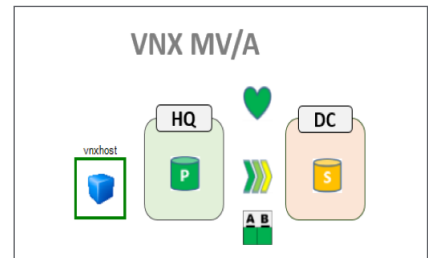
And here's how they've associated custom images with changes in state during a DR test event.



Here is the normal state, as indicated by the green images. An information alert is active for the "probe" object – shown as the green heart.



The probe is now turned off, causing the image to change to a red heart.



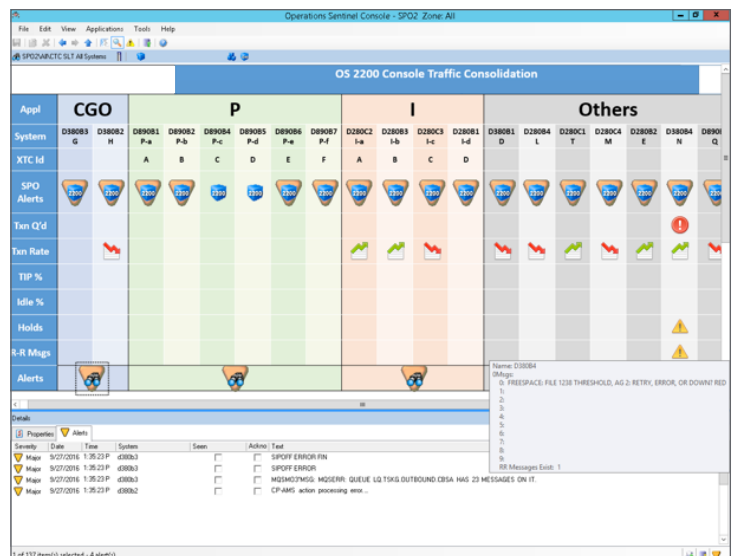
After the test, replication from the primary site to the secondary site is resumed. This state is shown with different images.

When this second client's ClearPath MCP environment is in a normal state, no image is associated with the Waiting Entries metric, and the CPU Idle is depicted as a full battery. When an exception is detected, Operations Sentinel updates the object to display an image that best indicates the detected state, as shown in the "DEV" column below. Also note that key information can be displayed when the cursor hovers over the object – in this case, the number of Waiting Entries for the DEV system.

Libra Servers		
System	PROD	DEV
SPO Alerts		
Waiting Entries		
CPU Idle		

Finally, this client only wanted to display a subset and summary of key metrics across multiple OS 2200 systems. By switching to simple, actionable custom images, they made it easy for operators to keep track of changes and respond faster when problems occurred.

*If you'd like to see how the Operations Sentinel Autoaction Message System can help you simplify monitoring in your environment, please contact your Unisys sales representative. We'd be happy to set up a services engagement to train you on the process or manage the implementation for you.*





## Digital Delivery Is Coming!

To modernize the way we package and distribute all ClearPath software products, the upcoming release of ClearPath OS 2200 18.0 will see our approach to software distribution begin its transition from physical CDs and DVDs to digital downloads. The first major releases we'll deliver electronically will be OS 2200 Release 17.0 and OS 2200 Release 18.0, with others coming soon thereafter.

All downloads will be made available via the [Unisys Download Center \(UDC\)](#). As part of this transition, we'll be enhancing the UDC with a new, easier-to-use interface. It will also begin leveraging an industry-standard Content Delivery Network to provide fast, reliable downloads.

### How it Will Work

When an order is fulfilled via digital download, you'll receive an email containing a link to the UDC and any relevant login credentials. After signing in, you'll see a page with all of your downloadable orders. Once you choose a specific order, you'll be directed to a page with the contents of that order.

The contents pages are structured around a series of "tiles," each of which represents a specific collection of artifacts. For example, a tile labeled "keys and documents" will take you to files containing keys and PDF documents that have been generated specifically for that order. While on the contents pages, you have the option to download all of the items or select only those you need.

To help make this process as fast and easy as possible, we'll be providing you with two primary sets of instructions:

- **Download instructions:** Available on the UDC login page, these instructions include details on how to find your order, how to specify the destination for the downloaded files, how to download the files, etc. Note that these instructions deal specifically with the UDC and are standard across all downloadable products.
- **A welcome letter:** Linked at the top of the order contents page, the welcome letter provides product-specific instructions for the files after you download them. For example, you'll see instructions describing how to convert .iso images into OS 2200 formatted files.

*Stay on the lookout for additional details about our new digital delivery model as we move closer to the release of OS 2200 18.0. If you have any questions or concerns in the meantime, please contact your Unisys sales representative.*

## Putting Python to Work

The recent release of the Rapid Application Development (RAD) paradigm for ClearPath MCP and OS 2200 environments makes it possible for your developers to author programs in the popular Python language directly within your ClearPath Forward environment.

And now that your developers have the option to work the Python language into their projects, we wanted to share an example of how it could be put to use in the ClearPath Forward environment.

So, read on to see how we used Python to create a ClearPath MCP application that manages automated testing activities.

### Envisioning the Project

The goal of this project was to enable our compiler team to manage testing that resides on their ClearPath Forward Libra system over the web. To make that possible, we wanted to build a web interface that allows users to either launch specific tests or run all testing at once. Once the parameters are specified, the backend system sets up a WFL parameter string that in turn launches the corresponding WFL job on the ClearPath Forward system.

We chose the popular Django web framework to provide the web services portion of our Python application. We also used a module called Python for .NET (Pythonnet), which allows CLR namespaces to be treated as Python packages. This enabled us to utilize the ClearPath Application Integration Services (AIS) tool – a standard part of the Python RAD – to implement the application.

Note that to get all of this working, AIS requires a library on the MCP side that launches a WFL job based on the string that is passed in. The required WFL proxy library is described in the documentation provided with the Python RAD.

Using Python made for a quick implementation, as much of our existing functionality was utilized to implement key parts of the new application. Best of all, this same approach can help your existing ClearPath Forward applications take advantage of the wealth of functionality available to Python developers.

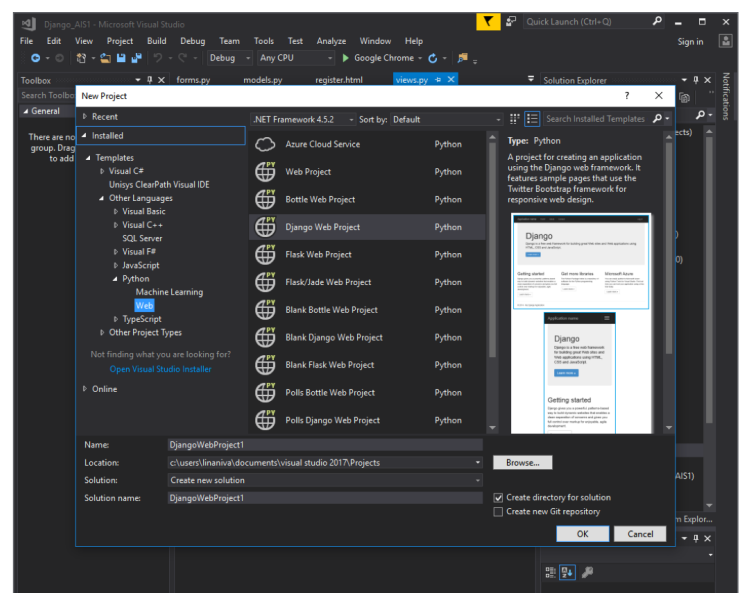
### Executing the Project

After establishing the ability to call into the AIS .NET library, the rest of the development work happened in Python.

Here's what we did...

Because Microsoft Visual Studio® 2017 includes extensive support for Python development across a number of frameworks, getting started with a Django project was extremely easy.

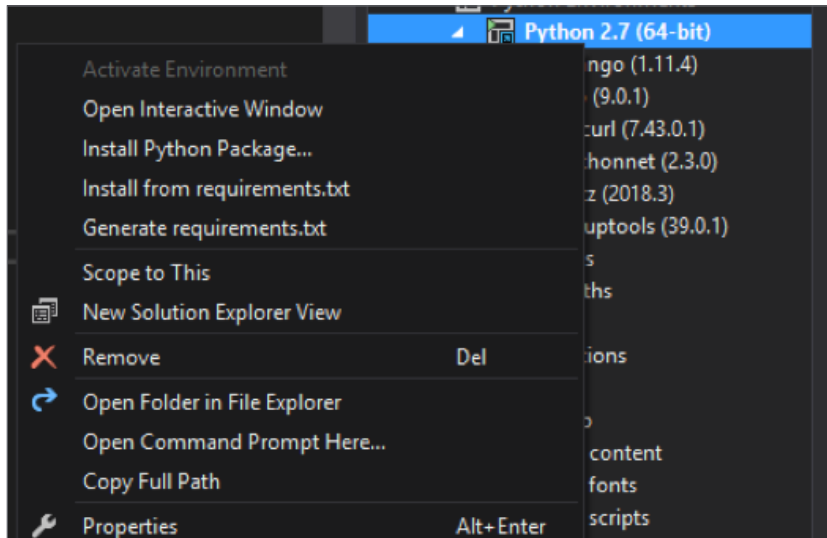
Simply select File>New>Project. Then, choose “Django Web Project.” More information about getting started with Django and Visual Studio 2017 can be found on the Microsoft Developer Network. >>



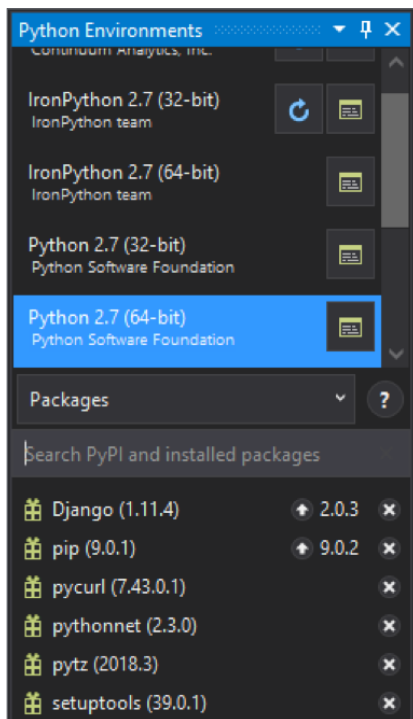


Next, you add the Pythonnet module in Visual Studio.

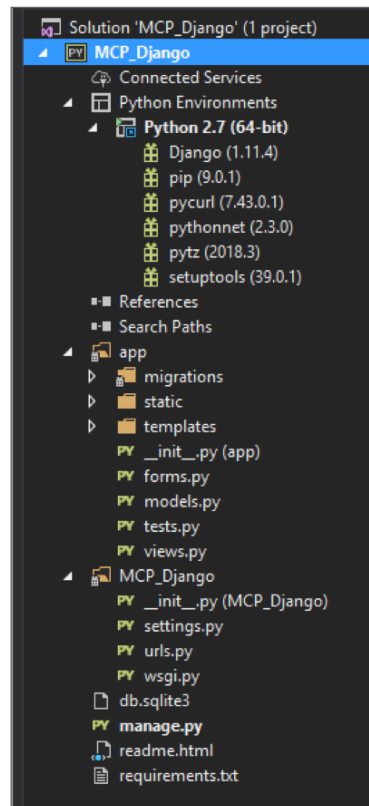
In the solution explorer, right click on the Python version, then choose “Install Python Package.”



Then, put “Pythonnet” into the search bar and install Pythonnet.



At this point, your Python environment should look something like this: >>



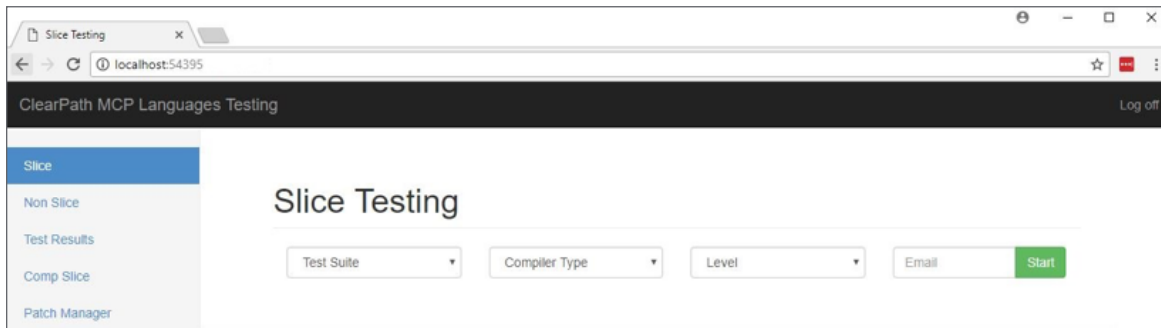
After importing the Pythonnet module, you'll be able to import CLR. Do this in the Python file where you plan on executing the method calls into AIS, then add the references to the AIS DLL and the WFLPROXY DLL described in the documentation. At this point, you may want to refer to the documentation for more detailed information about which methods and parameters are expected to call into AIS.

```
import clr

clr.AddReference("C:\\Program Files\\Unisys\\ClearPath\\App Integration Services\\ClearPathInterface.dll")
import Unisys.MCP.Interface

clr.AddReference("C:\\Users\\LINANIVA\\Documents\\Visual Studio 2017\\Projects\\Compiler Testing\\Compiler Testing\\WFLPROXY.dll")
```

And here is the end result of this work:



The “test suite” field is used to select a specific suite from all available tests. The “compiler type” field lets us choose the compiler type – released, internal, or prototype. The “level” field indicates which release level to use. And the “email” field allows testers to choose who receives a message containing the test results. You can learn more about the Bootstrap template used for this interface [here](#).

*This example is just one of many projects you could create when you utilize the combined power of Python programming and your ClearPath Forward environment. Have a project you're looking to start? We'd be happy to help guide you. If you're interested, please contact your Unisys sales representative today.*



## Simplifying Security Reporting with Locum Software Products

By Fernando Noguchi, ClearPath Solutions Architect, Unisys

Tight security is a proven, long-standing hallmark of the ClearPath Forward environment. Even in its default settings, ClearPath Forward security provides ample protection for even the most demanding applications and workloads. And with the complementary Secure Access Control Module (SACM) package, you can benefit from even more security features, such as longer passwords, greater password complexity, and password valid dates.

Nevertheless, reporting on which settings are configured and how these settings contribute to your organization's overall compliance position can prove challenging – especially as your environment grows in complexity. For instance, quickly showing how many usercodes are configured, and identifying the privileged users among them, can prove daunting.

Easing complex security reports was a key reason why we partnered with Locum Software Services Ltd., a UK-based software provider that makes security-related tools for the ClearPath MCP operating environment. In particular, the Locum SafeSurvey and Locum SecureAudit products – both part of the comprehensive Locum 360 solution – were built specifically to help you address various security reporting requirements.

With SafeSurvey, you can access reports containing the configuration information auditors typically request. Using SecureAudit, you'll be able to analyze and report on security violations that are registered in the SUMLOG or SECURITYLOG files the system automatically generates.

And the best news of all: Both products are included in the ClearPath MCP software stack in their “summary” versions. While these provide ample information on their own, there are “detailed” versions of each product that require a separate activation key.

Wondering specifically how these tools could be put to use? Consider these examples...

### Identifying Internal Exposures

During a tech demo, a member of our client's support team knew the organization had done well to protect itself against external threats, like hackers looking for sensitive data, but wasn't as certain when it came to internal exposure points.

A demo of SecureAudit extracted data showing several security violations. After digging a bit deeper, we isolated the events and identified the root cause as a password mismatch caused by a change in the password used to access a specific MCP network drive. With the help of the demo, it soon became clear that this one issue could impact the integrity of Client Access Services and the overall security of the system.

### Tracking Down Privileged Users

We asked a client to predict how many privileged usercodes were present in their Userdatafile. Out of approximately 500, they estimated no more than five or six had privileged status. After generating a quick report in SafeSurvey, it turned out over 100 were designated as “privileged,” “SecAdmin,” or both. Once again, this is an insight the organization would not have easily discovered without the help of the Locum software.

*These are just a few examples of the many ways the Locum software products can bring more clarity and control to your security operations. If you'd like to see them in action at your site, please [visit our web site](#) or contact your Unisys sales representative to schedule a demonstration today.*



## Resources

The list below contains quick links that will help you stay up to date on all things ClearPath Forward.

- [ClearPath Forward homepage](#)
- [ClearPath Forward Services homepage](#)
- [Agile Business Suite homepage](#)
- [Business Information Server \(BIS\) homepage](#)
- [ClearPath Forward & Innovation Blog](#)
- [ClearPath Forward How-To Videos on YouTube](#)
- [ClearPath Forward Libra/MCP Webinars](#)
- [ClearPath Forward Dorado/OS 2200 Webinars](#)
- [eBook: The Power of Innovation: ClearPath Forward Systems in Action](#)
- [eBook: The Road to Innovation: ClearPath Forward Services](#)
- [eBook: Understanding the Economics of ClearPath Systems](#)
- [eBook: How to Shift Your IT Focus from Administration to Innovation](#)
- [Brochure: Evolve, Implement, Manage: The New ClearPath Forward Services Portfolio](#)
- [Video Playlist: ClearPath OS 2200 Software Release 17.0 Technical Update \(27 Videos\)](#)
- [Video Playlist: ClearPath MCP Software Release 18.0 Technical Update \(19 Videos\)](#)
- [ClearPath Forward Client Education homepage](#)
- [Newsletter: Developing Agility December 2017](#)
- [Newsletter: ClearPath Forward Connection January 2018](#)

The latest:

- [Brochure: Unisys Business Information Server: Your Engine for Turning Raw Data Into Actionable Information](#)
- [Brochure: The Unisys ClearPath Forward ePortal for MCP and OS 2200 Environments](#)
- [Executive Brief: Your Data, Transformed: Unisys Business Information Server](#)
- [Executive Brief: ClearPath Forward Innovation Workshops](#)
- [Executive Brief: Freedom, Power, Flexibility: The ClearPath MCP Software Series Products](#)