



## 3 APPROACHES TO CLOUD-BASED APP MODERNIZATION, SIMPLIFIED

As the cloud becomes the standard, the biggest decision facing enterprises is which application modernization approach is the right one for them. It's important to consider all aspects of your current situation and what you're trying to accomplish before getting started. Otherwise, you could end up with an implementation approach that doesn't align with your overall desired outcomes, timeline, or projected investment.

In this guide, we've simplified your app modernization journey by outlining 3 standard approaches for migrating apps to the cloud, as well as the pros, cons, challenges, and some key takeaways of each implementation method.



# THE TOP 3 APP MODERNIZATION APPROACHES

Below are the 3 standard approaches to app modernization:

1. **Rehost Approach** — Direct to Cloud lift and shift
2. **Replatform Approach** — Containerization
3. **Refactor Approach** — Full PaaS Modernization

## WHERE DO YOU START?

To help you get the most out of your modernization journey, we've listed out a few things you'll want to do before choosing an approach:

1. **Take an App Inventory:**

Do a careful analysis of your application landscape and the infrastructure that supports your apps first.

- How many apps do you have?
- What's your application's cloud compatibility?
- What's the application's short and long-term business value?

2. **Understand Your Goals:**

Identify what you're trying to accomplish with your modernization efforts.

- What are your organization's short-term goals and objectives?
- What are your organization's long-term goals and objectives?
- What's the return on investment (ROI) look like?

3. **Budget and Timeline:**

Take some time to look at your overall budget, timeline, and outcomes.

- What is the cost to realize and the level of effort needed?
- What's the projected value once reached?
- Is there a hard deadline you need to meet?

Once you have a good high level view of what you're trying to accomplish as well as an understanding of the reality of your current view, you can begin to analyze the different options you have and how they align to your vision. Now let's take a look at the individual approaches.

# The Rehost Approach — Direct to Cloud Lift and Shift

A faster, less resource-intensive migration that moves your apps to the cloud without any code modification.

**Cloud Maturity Level:** Low

**Value Level:** Low

**Azure Cloud Service:** IaaS

## ABOUT THIS APPROACH

The rehosting approach to app modernization is about capturing the on-premises environment that runs an application (the servers) and directly moving that to the cloud as virtual servers. In this approach, the environment hosting the application is modernized, but the core application itself is not significantly altered. This means you get the benefits of cloud hosting without the cloud-native app features. For applications that are existing or legacy assets, the key is to spend minimal time and money moving them to the cloud, to realize significant benefits.

The primary limitation to modernizing your apps is the application's inherent cloud compatibility. Certain applications have internal and external dependencies which inherently limit themselves to a direct to cloud lift and shift, eliminating the possibility of one of our other approaches, such as replatforming or refactoring.

## HOW IS IT DONE?

1. The application environment footprint and dependencies are reviewed using standard datacenter analysis tools.
2. Next, we determine the migration model, whether that means a machine snapshot capture or new cloud virtual machine plus the deployment of the application and dependencies.
3. Lastly, we automate the environment delivery through the appropriate tools and processes.

# The Rehost Approach — Direct to Cloud Lift and Shift

## PROS

### **Minimal Refactoring —**

With this approach, no refactor of code should be required, making for a shorter timeline and less upfront cost to get you hosted in the cloud.

### **Speed of Modernization —**

Quickly move your apps out of a datacenter and kickstart cloud adoption with the speed of lift and shift.

### **Ditch Data Centers —**

Alleviate common challenges of provisioning infrastructure in on-premises data centers (hardware, rackspace, installation, end-of-life issues, etc.).

### **Improved Disaster Recovery Options —**

In the event of a disaster, you'll have a greatly improved and modernized disaster recovery posture including site recovery, cloud-backed storage of server disks, and more.

### **Scale with Ease —**

With cloud hosting, you have more flexibility to “scale” the application servers as needed through a vast number of virtual machine configuration options.

### **Better Data Analytics —**

Realize new opportunities to monitor for and report on performance, compliance, security, and more.

### **Utilize *Some* Cloud Benefits —**

Even though many of capabilities of modern cloud platforms are not realized, some significant advantages of the cloud are still available.

## CONS

### **Cloud Benefits Not Fully Realized —**

Lift-and-shift migrations don't generally benefit from cloud-native features like elasticity.

### **Cost of Hosting —**

While more cost-effective than on-premises, it can be more costly to run applications in the cloud this way than if you were to replatform or refactor.



# The Rehost Approach — Direct to Cloud Lift and Shift

## COMMON CHALLENGES THE APPROACH ADDRESSES

**Slow Provisioning** — Alleviate the frustrations of provisioning new servers or infrastructure that are too slow or unavailable.

**Data Center Evacuations** — Say goodbye to mandatory data center evacuations (among many other data center challenges).

**Low Resources** — Eliminate the worry of limited or non-existent resources to refactor applications.

**Fulfill Business Continuity Requirements** — Enable the ability to quickly address Disaster Recovery/Business Continuity requirements.

**Licensing Costs** — Avoid costly hardware and software license renewals (in some cases).

**Address EOL Challenges** — Extend support for 2008 Windows and SQL past end of life without having to modify the operating system or application to do an upgrade.

**Agile & Affordable Testing** — Provide development and test environments quickly and affordably.

## KEY TAKEAWAYS

If you're simply trying to get your apps hosted on the cloud to utilize cloud benefits such as better disaster recovery options, and cloud native features aren't your greatest concern, this approach is probably a good fit for you. This can always be a good first step if you find yourself with limited or non-existent resources to refactor applications.



# The Replatform Approach — Containerization

Utilize the power of lightweight, stand-alone containers to package code, runtime, system tools, system libraries, and settings to run legacy software in the cloud seamlessly.

**Cloud Maturity Level:** Medium

**Value Level:** Medium

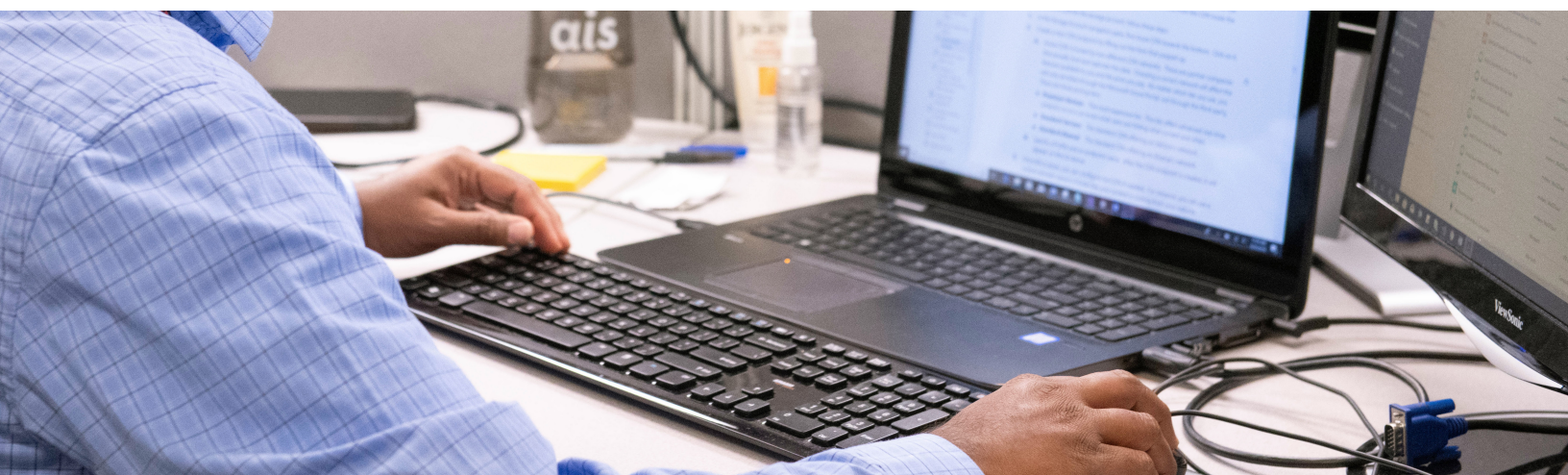
**Azure Cloud Service:** IaaS

## ABOUT THIS APPROACH

This approach is about modernizing legacy applications only enough so that they can be containerized and deployed to the cloud. Minor code refactor could be required, but significant refactor can typically be avoided.

## HOW IS IT DONE?

Containerization enables enterprise orgs to extract applications from the software and hardware environment in which they run. Available for both Linux and Windows-based applications, containerized software will always run the same, regardless of the infrastructure. Containers isolate software from its environment and ensure that it works uniformly despite differences for instance between development and staging.



# The Replatform Approach — Containerization

## PROS

### **Portability —**

Containers enable portability because they include all the variables and dependencies that could impact the way an application runs.

### **Different Solutions, Same Environment —**

The developer can rely on the scripts that are baked into the container to work, no matter the environment in which the app is run, so you can run multiple solutions in the same environment.

### **Improve IT Efficiency —**

Reduce maintenance burden by relying on more cloud services, reduced number of VMs, and a simplified disaster recovery plan.

### **Immediate DevOps Improvements —**

Simplify distribution through standard repositories, eliminate manual installs, and realize more environment consistency.

## CONS

### **Lack of Flexibility —**

Containers can only do so much. Put a monolithic app in a container and onto a cloud platform, and it's still a monolith.



# The Replatform Approach — Containerization

## COMMON CHALLENGES THE APPROACH ADDRESSES

**Updating legacy code** — If your original application owner is no longer available, this makes it difficult to update code.

**Dependencies** — Dependencies make it difficult to migrate to new infrastructure, cloud native services.

**Resources** — Sometimes resources necessary to re-write the application are scarce.

## KEY TAKEAWAYS

This approach gets you halfway to a fully realized cloud maturity model, allowing you to take advantage of cloud benefits such as flexibility, efficiency, and more without fully re-architecting your apps.





# The Refactor Approach — Full PaaS Modernization

Re-architecture cloud compatible legacy applications to fully realize the features of cloud-optimized and cloud-native application architectures.

**Cloud Maturity Level:** High

**Value Level:** High

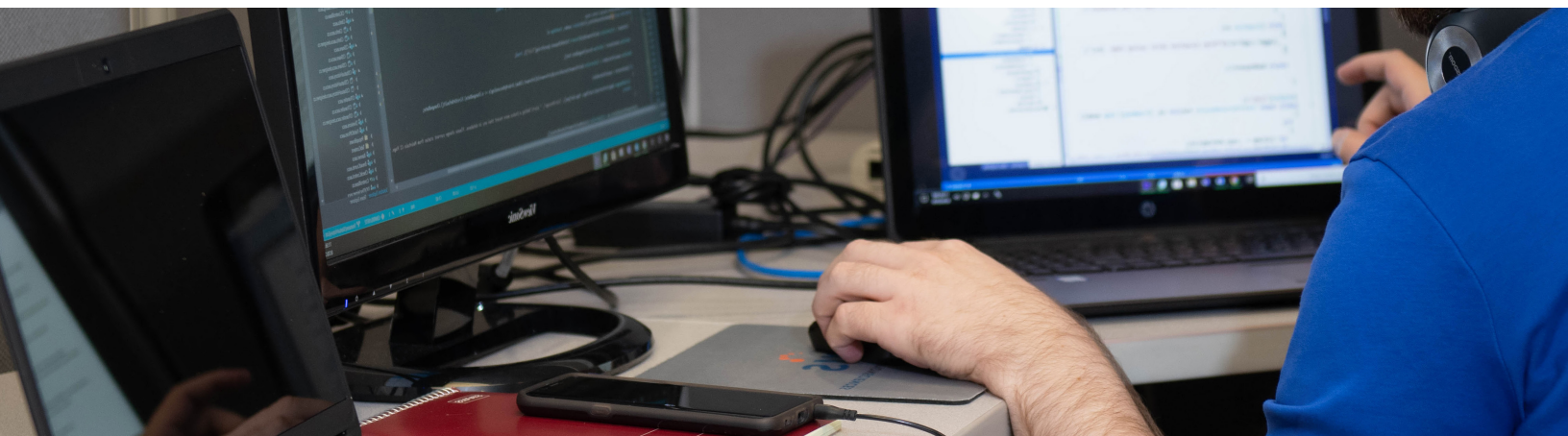
**Azure Cloud Service:** PaaS

## ABOUT THIS APPROACH

This approach is about modernizing legacy applications by re-architecting to target cloud native, “serverless” technologies wherever possible. Refactoring typically requires more significant recoding of an existing application, however, this method takes advantage of the best of what public cloud has to offer – managed offerings for all application components.

If the cloud compatibility assessment doesn’t limit the potential cloud maturity model of your apps, then time and cost should factor into your decision. Not all applications warrant the investment of moving to a platform as a service (PaaS) model or developing a cloud-native or cloud-optimized application model.

For modern applications with the best long-term agility and value for the organization, you might benefit from investing in cloud-optimized and cloud-native application architectures.



# The Refactor Approach — Full PaaS Modernization

## PROS

### **Speed —**

With full cloud capabilities, you're paying for premium reliability and speed. Cloud architecture was built for high performance.

### **Security —**

It's now possible to have speed and security with the cloud. PaaS makes balancing the need to move rapidly with the needs of stability, availability, and durability look easy, and Microsoft continues to invest in cloud security each day.

### **Flexibility —**

In traditional legacy architectures, growth meant purchasing larger servers, making for tedious and costly scaling. Today you can scale up or down as needed in minutes.

### **Potential lower cost of ownership —**

Refactoring can offer the lowest monthly spend of the three approaches.

### **Future Maintainability —**

Updating and optimizing code to maximize cloud-native functionality future-proof the application, giving it a longer lifespan and making it easier to maintain as technology continues to evolve.

## CONS

### **Time Intensive —**

This approach is the most time-consuming and resource-intensive, yet the impact it can have often outweighs the initial investment for business-critical apps.

# The Refactor Approach — Full PaaS Modernization

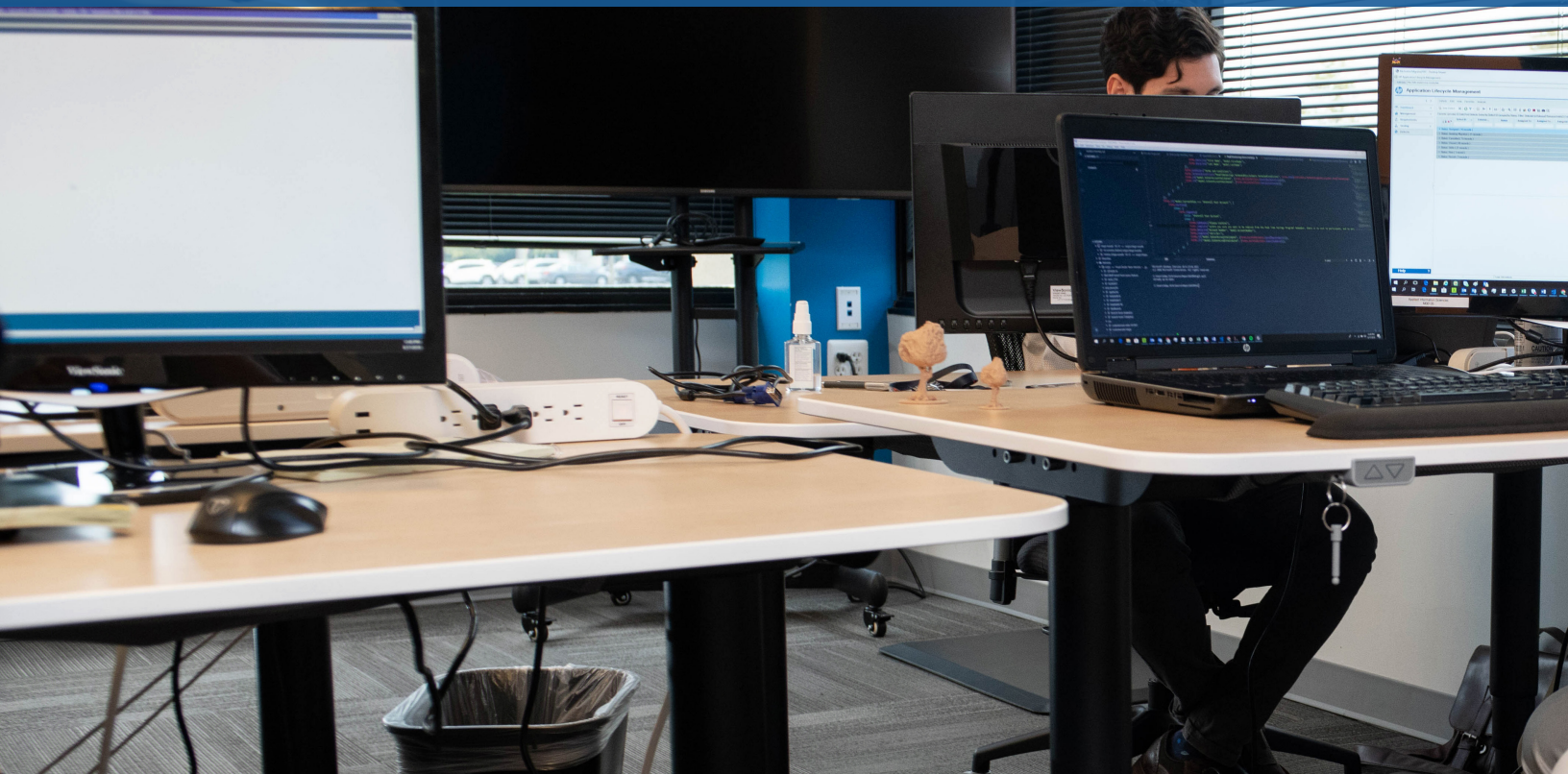
## COMMON CHALLENGES THE APPROACH ADDRESSES

**Modern Capabilities** — This approach meets the need to provide modern capabilities and innovate faster.

**Better Infrastructure** — Existing infrastructure is expensive and difficult to provision, maintain, scale, and secure.

## KEY TAKEAWAYS

We would ultimately recommend this for organizations who have applications that are relatively cloud-ready, and provide a long term business value to the organization.





## ARE THERE OTHER OPTIONS?

At the end of the day, **Rehosting**, **Replatforming**, and **Refactoring** aren't your only options.

Often times after an analysis of a set of business applications, organizations may find that 10% or even 20% of their apps aren't going to provide enough business value to makes them worth migrating. In this instance, **Retiring** the application is your best option.

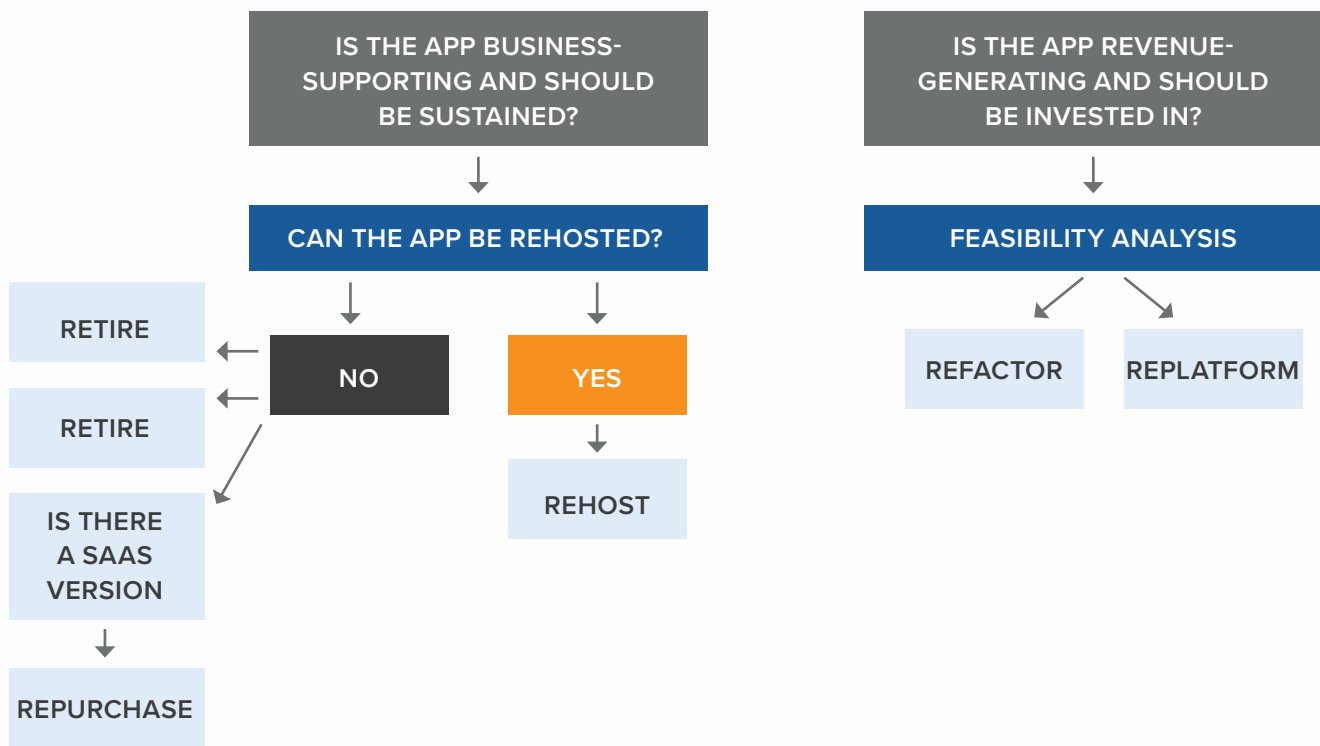
There's also the case where you just aren't ready to prioritize the update of a set of applications and there's nothing pressing the need to migrate. **Retaining**, or in other words, revisiting the apps or doing nothing (for now) is the best option for you at this time. As a rule of thumb, don't migrate just to get everything in the cloud; only do or migrate what makes sense for your business.

Is there an out of the box or customizable software that accomplishes what you need it to? If so, give **Replacing** the application's underlying technology a chance. There are any number of "as a service" offerings that may be a good fit for your application, such as Sharepoint Online, CRM, or any of the thousand niche technologies out there. Don't know where to start? [Ask a professional.](#)





## SUMMING UP



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If you're looking for long term benefits and ROI and are willing to put in time and effort upfront to get it right, you're going to want something like a full PaaS offering (Refactor Approach). If you're in a hurry and simply need to get your apps hosted in the cloud to cut data center costs, something like a lift and shift (Rehost Approach) may be a good place to start. The benefits of shifting your apps (Replatform Approach) is that you can always refocus on infrastructure once you've made the transition to the cloud.

It's important to understand that apps are often not limited to a single approach. Each situation is different based on long and short term goals, budget, timeline, and at the end of the day may require a hybrid or staged approach. For ultimate success, know your options and find a partner you can trust who can run through an application assessment exercise or a proof of concept to test the viability and outcomes of each approach with you and provide support along the way.

# AIS CLOUD CREDENTIALS

AIS has been cutting our teeth with public cloud infrastructure since 2008 through our partnerships with Microsoft and AWS. Given our matchless Azure technical expertise; often Microsoft turns to us to build Azure reference architectures and blueprints for migrating complex application environments into Azure. [And we've created a proven Cloud Adoption Framework](#) that provides step-by-step guidance and best practices in moving to the cloud.

As a company built on a foundation of [application development](#) and software consulting capabilities, AIS is uniquely qualified to take our clients through all phases of cloud adoption. We can move clients from quick “lifting and shifting” of existing applications into cloud infrastructure services (IaaS) to refactoring applications harnessing native cloud platform as a service (PaaS) and software as a service (SaaS) capabilities.

We have helped scores of complex commercial enterprises and government organizations migrate to Azure, AWS, Office 365, and Dynamics 365. We will spend the time to understand your business needs and workload requirements and then outline a meticulous cloud plan that meets your scalability, governance, security, and budget needs.

## GET STARTED WITH AIS TODAY

Contact AIS to begin your modernization journey. With the right people, expertise, and best practices in place, you can be sure you're on the right track to modernizing your apps.

[Learn More at www.appliedis.com](http://www.appliedis.com)



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