There is a Right Way to Go "All-in" on the Cloud

by Jerome M Wendt

More companies than ever plan to go "all-in" on the cloud but, as they do, they must simultaneously go "all-in" on implementing software to ensure they can optimize their applications whether they reside on-premises or in the cloud. Using Quest Software's Foglight software, companies can confidently go "all-in" on their cloud initiatives as it provides them the means to optimize the placement of their applications in the cloud or on-premises even as they mitigate the possibility of cloud cost overruns.

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BEST PRACTICES FOR GOING "ALL-IN" ON THE CLOUD

- Identify all applications running on-premises.
- Quantify the resources used by on-premises applications and when and how they are used.
- Identify which applications will belong in the cloud and which will stay on-premises.
- Map each on-premises application to the appropriate VM instance type in the cloud.
- Determine which general-purpose cloud provider(s) to use.
- Use the software to manage applications residing on-premises and in the cloud.

Going *"All-in"* on the Cloud Changes the Dynamics of System Administration

More companies than ever plan to go *"all-in"* on the cloud using platforms such as Amazon Web Services (AWS) and Microsoft Azure to host their applications. But as a company goes *"all-in"* on the cloud, it needs to re-examine some of its assumptions and processes as to how it will administer this new environment. In many instances, a company's IT staff will find that it must manage a hybrid cloud environment for some time—perhaps even indefinitely.

When a company goes *"all-in"* on the cloud, it generally puts two policies in motion almost immediately.

1. ***It prepares to move existing applications to the cloud.*** This first half of this strategy requires IT staff to inventory the company's existing on-premises applications and ready them to move to the cloud.
2. ***It adopts a cloud first strategy.*** This other half of the strategy demands that all new applications reside in the cloud. Any exceptions to this policy require the application owners to justify why they should host their application on-premises.

These two polices, in turn, change the dynamics of how a company administers its IT environment.

First, as a company looks to migrate its applications to the cloud, it must first understand which of its applications it can move to the cloud. During this internal review, it may uncover it cannot move some applications to the cloud for business, compliance, and/or technical reasons.

Once it establishes which applications it can move to the cloud, it can then prioritize the order in which it will migrate its applications to the cloud; the method or methods it will use to migrate them; and, when it will move them.

Second, in adopting a cloud first approach for its new applications, the company mitigates or eliminates its upfront hardware costs normally associated with deploying that application on-premises. However, the company will pay for the cloud resources that the application uses each month.

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These costs may, over a three to five-year period, exceed what the company might pay to host that same application on-premises. To set an application in the cloud and not proactively manage it over time could result in the application's costs exceeding what it would have cost keeping the application on-premises.

As a company makes these decisions about what applications to keep on-premises and move to the cloud as well as optimizing those that it does initially place in the cloud, best practices exist that it can follow for each environment to ensure it makes the best decision about each application. These best practices can also help ensure that a company continues to place its applications in the right location using the right resources over time.

Best Practices for Getting Ready to Go *"All-in"* on the Cloud

To ensure an application migration to the cloud goes well or that a company should even migrate a specific application to the cloud requires a thorough understanding of each application. This understanding should encompass what resources the application currently uses as well as how it behaves over time. To gather the information it needs about each application, here is a list of best practices that a company can put in place for its on-premises applications before it moves any of them to the cloud.

1. ***Identify all applications running on-premises.*** A company may assume it knows what applications it has running in its data center environment. However, it is better to be safe than sorry. It should first inventory and actively monitor its on-premises environment to establish a baseline as well as identify any new virtual or physical machines that come online.
2. ***Quantify the resources used by these applications and when and how they use them.*** This step ensures that a company has a firm handle on the resources each application will need in the cloud, how much of these resources each one will need, and what types of resources it will need. For instance, simply knowing one needs to move a virtual machine (VM) to the cloud is insufficient. A company needs to know how much CPU, memory, and storage each VM needs; when the application runs; its run-time behavior; and, its periods of peak performance to choose the most appropriate VM instance type in the cloud to host it.
3. ***Identify which applications to move and which ones will stay.*** Test and development applications will generally top the list of applications that a company will move to the cloud first. This approach gives a company the opportunity to become familiar with the cloud, its operations, and billing. Then a company should prioritize production applications starting with the ones that have the lowest level of impact to the business. Business and mission critical applications should be some of the last ones that a company moves. Applications that will stay on-premises are often legacy applications or those that cloud providers do not support.
4. ***Map each application to the appropriate VM instance in the cloud.*** To make the best choice requires that a company knows both its application requirements and the offerings available from the cloud provider. This can take some time to quantify as Amazon Web Services (AWS) offers over 90 different VM instance types on which a company may choose to host an application while Microsoft Azure offers over 150 VM instance types.

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Further, each of these provider's VMs may be deployed as an on-demand, reserved, or spot instance that each has access to multiple types of storage. A company may even look to move to serverless compute. To select the most appropriate VM instance type for each application requires that a company know at the outset the capacity and performance requirements of each VM as well as its data protection requirements. This information will ensure a company can select the best VM to host it as well as appropriately configure the VM's CPU, data protection, memory, and storage settings.

5. ***Determine which general-purpose cloud provider to use.*** Due to the multiple VM instance types each cloud provider offers and the varying costs of each VM instance type, it behooves a company to explore which cloud provider can best deliver the hosting services it needs. This decision may come down to price. Once it maps each of its applications to a cloud provider's VM instance type, a company should be able to get an estimate of what its monthly cost will be to host its applications in each provider's cloud.

Go *"All-in"* on Optimizing Applications Hosted in the Cloud

Once a company begins to manage the applications it has migrated to the cloud, as well as any net new applications that are born in the cloud, it needs to implement the appropriate set of best practices for managing them. In this respect, the

best practices a company puts in place on-premises as it prepares to migrate its applications to the cloud will largely persist once its applications reside in the cloud.

While a company may have used policies like this to some degree when hosting VMs on-premises, its reasons for doing so were largely technical. For instance, a company may move a VM or VMs from one host to another for improved availability or performance. However, the financial angle was not always a primary motivation since the company already owned the hardware on which these VMs ran.

A company needs to view the cloud differently. The cloud does more than give a company the freedom to manage where an application resides in the cloud or how the company uses the cloud's resources. Cloud providers ***reward*** a company for optimizing how its applications utilize the resources in the cloud. Perhaps more important to keep in mind, cloud providers will penalize a company that fails to do so.

To reap the rewards the cloud has to offer, a company should seek to deploy software that monitors each of its application's usage of cloud resources. The software should then also analyze and make recommendations as to how the company can optimize each application's usage of these resources.

A company needs to grasp that the meter is always on once it moves its applications to the cloud. The better that a company understands how its applications use these cloud resources, when these applications use them, and if they use them, the better a company can manage and optimize each application's usage of them. This understanding will, in turn, help the company better control its cloud costs initially and over time.

To put this best practice into motion requires that a company select the right software that helps it optimize its usage of cloud resources and control its cloud costs. To achieve this end, a company needs software that possesses the following three key attributes.

1. ***Monitors each application's usage of the cloud resources***. This software should mimic what occurs when monitoring and assessing applications on-premises. It should minimally monitor and track each application's CPU, memory, and storage usage, when its periods of peak usage are, and what data protection policies, if any, it should apply to protect and recover the application and its data.

2. ***Analyzes and makes recommendations on optimizing the application's usage of the cloud's available resources***. Once deployed in the cloud, applications are not static as their usage of cloud resources may decrease or increase over time. Applications will also have periods when they are busy, idle, relatively inactive, or experience periods of peak activity. It behooves a company to have software that can monitor and understand the application's activity and make recommendations on how to optimize its placement in the cloud during each one of these activity periods.

   A simple example is if a company initially deploys an application on an on-demand VM hosted in the cloud that is CPU and memory intensive. This VM could hypothetically cost five dollars an hour to operate. However, the software may determine that the VM only needs these resources one hour a day.

   The application should flag that application and make recommendations on how a company can optimize the deployment of that application in the cloud. These recommendations may include shutting the VM down for the other 23 hours; moving it to a lower performing, lower cost VM for those hours; or, hosting the VM on a reserved or spot instance in the cloud.

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   Due to the large number of existing and changing variables associated with the cloud and each application, the software needs to constantly monitor all these variables as these variables far exceed what any individual or even a team of individuals could analyze on their own. The software should provide guidance and even prioritize which applications a company should optimize first.

3. ***Works both on-premises and in the cloud.*** Using the same software to manage applications in the cloud and on-premises becomes almost a necessity. Aside from the obvious benefit of providing a company with a single pane of glass to manage its hybrid environment, a company will also want the software to advise it on when or if to move its applications from on-premises to the cloud and vice versa. Using this software, a company can build the justifications it needs as to where to host its applications and when to host them there. Building these business cases only becomes possible when the software spans both on-premises and cloud environments.

Go *"All-in"* on the Cloud… Just Do it the Right Way

Report after report is coming out about companies going *"all-in"* on the cloud in large part because more companies than ever see the benefits the cloud offers. But as a company goes *"all-in"* on the cloud, it should also prepare to go *"all-in"* on optimizing the applications that it hosts in the cloud.

This requires that it implement software such as Quest Software's Foglight. This software does more than monitor and track each application's usage of resources in the cloud. It spans both on-premises and cloud environments to provide a company with a holistic view into its applications regardless of where they reside.

In so doing, it helps a company know which applications it should keep on-premises, which ones it should move to the cloud, and which ones it should consider moving back on-premises. It also gives a company the information and analytics it needs to optimize each of its application's usage of cloud resources while laying the foundation to automate these cloud optimization activities in the future.

Companies have good reason for wanting to go *"all-in"* on the cloud as part of their overall business and IT strategies. But integral to both these strategies, a company must also have a means to ensure the stability of this new hybrid cloud environment as well as provide assurances that its cloud costs will be managed and controlled over time. By going *"all-in"* on software such as Quest Software's Foglight, a company can have confidence that its decision to go *"all-in"* on the cloud will succeed initially and then continue to pay-off over time. ■