

The State of Azure

After a rough beginning, Windows Azure is emerging as a strong hybrid cloud option.

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Microsoft Azure Gets its Game On

WITH ITS UBIQUITOUS desktop and server OS, Microsoft has long held a distinct advantage in the enterprise. But when it comes to the cloud, and, specifically, its own Azure cloud environment, Microsoft is playing a game of catch-up with public cloud juggernaut Amazon Web Services.

As the market, and Azure itself, matures, IT decision-makers are taking a closer look at Microsoft's cloud platform. Is it a strong cloud option? What's different now? Is Azure developing into a viable alternative to Amazon?

This handbook explores these questions. First, TechTarget's Ed Scannell writes about how IT pros have grown more comfortable with cloud computing and why they are increasingly willing to give Azure a chance.

Part of what's driving that acceptance is that Microsoft has introduced a spate of features that match those found in AWS. SearchCloud-Computing writer Trevor Jones details some of those key additions to the Azure environment.

Lastly, Windows expert Nirmal Sharma addresses how Microsoft and third-party vendors have developed Azure management tools, and how those tools are helping to simplify tasks in a platform that has developed a reputation as being complex and technically challenging to manage. ■

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Microsoft Spins Azure as a Mature Cloud Option for Windows Shops

WHEN MICROSOFT INTRODUCED its Windows Azure cloud environment five years ago, many corporate IT shops were skeptical of its immediate advantages. Unlike Amazon Web Services, which at the time was focused on infrastructure as a service (IaaS) and had a plethora of Web offerings, Azure was platform as a service (Paas), with only a handful of services.

“[Azure] was hard for IT departments to understand,” said Rob Sanfilippo, an analyst at Directions on Microsoft, a consulting firm. “You couldn’t easily migrate on-premises apps without refactoring a lot of things,” he said. “Amazon Web Services, with IaaS and its migration strategy, made a whole lot more sense.”

Microsoft, however, has a brilliant history as a fast follower.

In recent years, Microsoft broadened Azure with IaaS and reached out to other platforms,

Sanfilippo said. It copied Amazon’s approach and delivered a handful of IaaS products, including Azure Virtual Machines.

And Microsoft didn’t stop there. In an unprecedented move, the company began offering key infrastructure products that worked with both Windows Server and Linux—knowing IT pros were increasingly transferring workloads to the Apache Web Server.

What has also encouraged adoption of Microsoft’s cloud platform is the company’s emphasis on the hybrid strategy. This was designed to let Microsoft’s Windows customer base better integrate applications that run on local servers with counterpart applications in the cloud. Microsoft says this approach resonates with its customers, with about 10,000 new Azure subscriptions being added every week.

“Many customers already use our [on-premises] infrastructure products like Windows

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Server, System Center 2012 or SQL Server, so [we] offer them the same consistent platform in the cloud that they can run in their own environments,” said Mike Shutz, a general manager on Microsoft’s cloud tools team. “This is more about bringing the cloud to [customers], as opposed to dragging them to it.”

This approach lets some IT shops move at their own pace, especially if their ultimate goal is to migrate some of their most important applications to the cloud.

A hybrid strategy lets users test the cloud without having to commit to it, said one IT professional at a manufacturing company based in St. Paul, Minn. “We can see what makes sense for the cloud and what to keep on-premises. It also helps with migrations across divisions,” he said.

THE SHADY SIDE OF ADOPTION NUMBERS

A close look at Azure’s rapid adoption numbers over the past year or two shows many user accounts that are listed as having “adopted” the platform remain in the evaluation/test stage, according to sources close to Microsoft. Not all

of those numbers reflect actual use of Azure in a production environment.

“My definition of adoption includes the fact that meaningful workloads are being deployed to Azure, and I can tell you the amount of unconsumed Azure is huge among larger accounts,” said one source familiar with Microsoft’s internal operations.

So what’s the hold up? One stumbling block is that not every corporate infrastructure is properly set up or tuned to take advantage of Azure’s core capabilities.

“Many times users are trying to layer [Azure] on top of something that is not set up to handle it, which undermines [Microsoft’s] hybrid cloud approach,” the source said. “When this happens, some just put the implementation project aside until problems can be resolved.”

And yet, IT shops are keenly aware they possess unused licenses for Azure acquired through long-term enterprise agreements. This, according to some, is also artificially boosting adoption numbers. Microsoft gives large customers up to \$150 per user, per month for Azure as part of some contracts.

“A lot of users have credits for Azure they

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signed up for and are not using,” Sanfilippo said. “But I think more IT departments are coming around to the realization they should start using what they are paying for, which is helping adoption.”

FILLING THE AZURE FEATURE WELL

To flesh out its hybrid strategy, Microsoft continues to deliver a steady stream of cloud-based applications and services. Azure AD and the Azure SQL Database are two of the more notable cloud-based products that have been released in recent years. Both products have proven popular among corporate users because they sync up with features within existing on-premises versions, making it easier to work on- and off-premises.

“We depend on [on-premises] Active Directory for some important things, especially security and authentication,” said a network administrator with a large transportation company in Jacksonville, Fla. “So if we were going to take [Active Directory] to the cloud, we needed

transparency between the two.”

The Azure SQL Database, a relational cloud-based service that competes against Amazon’s Relational Database Service, allows users to carry out relational queries against stored data. The service helps improve scalability, business continuity and data protection.

While Microsoft delivers hybrid IT offerings for Azure, it seems eager to do more. In early 2015, the company released Azure Machine Learning, a cloud technology designed to eliminate the heavy lifting involved with creating and deploying machine learning technologies. The product makes it possible to create an analytics Web service out of a data science workflow in only a few minutes.

“Azure is clearly the future for Microsoft,” said Dana Gardner, principal analyst with InterArbor Solutions, in Gilford, N.H. “[Microsoft needs] to make it easy for users to develop and deploy [Azure] and its applications in the cloud, while maintaining all the backward compatibility. It is the best way to make sure Windows shops become Azure shops.” —*Ed Scannell*

Added Features Fortify Microsoft Azure Against AWS

WITH A TRIO of new features, Microsoft Azure continues to build on its position as the top alternative to the king of public cloud, Amazon Web Services.

Updates to Microsoft Azure include new features around security, massive VMs and containers. And, with claims that it adds 10,000 new Azure customers a week, Microsoft has reached the point where it has a fully functioning cloud platform, said Carl Brooks, an analyst with 451 Research in New York.

The new Azure features don't stand out above what's available from the major cloud competitors, but they are positive additions, Brooks said. The enhancements also show that the historically slow-moving Microsoft is accelerating Azure's product development.

"These are all signs of Microsoft hitting its stride and doing what it said it would do," he said.

AZURE OPENS TO DOCKER

Azure customers can now use Docker engine on Ubuntu images via the Azure Marketplace. (Previously customers needed to use an extension model.) Microsoft also plans to offer Docker support in the forthcoming version of Windows.

Google and Amazon have offered Docker support since last year, while smaller players such as Joyent Inc. have based entire platforms around the container technology. But that lag shouldn't hurt Microsoft. While there's plenty

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of talk about Docker, there's not much evidence that IT shops are using it widely in production yet, said James Staten, an analyst with Forrester Research, in early 2015.

"They're behind in the hype cycle, but in terms of actual adoption of Docker they're not really behind at all," Staten said.

The ability to run Linux containers in Azure also points to Microsoft's competency to run non-Windows workloads, and backs up the rhetoric about embracing more open source products, Brooks said.

Forrester survey data shows a growing number of non-Windows workloads going up in Azure, Staten said.

"There's still a bias in their audience of people already in the c-sharp camp, but what it shows is those people are able to convince their colleagues in the company and people building with Linux and open source they can play at that game, too," Staten said.

The Azure cloud additions are largely catch-up, which is to be expected as Amazon, Google and Microsoft continually leapfrog each other with new features, Staten said. The new G-series VM sizes, however, are in some ways

ahead of the competition with 32 vCPUs, 448 GB of RAM and 6.59 terabytes of local SSD space.

The most common customer for the G-series will be in big data. Partners such as Cloudera Inc. and XtremeData Inc. need large amounts of fast local storage and a platform that can handle large-scale data replication.

Key Vault is another new feature in Azure. Customers will have centralized control over the security feature to encrypt data with asymmetric keys in hardware security modules.

Previously, Azure customers could bring their own keys. This is the first cloud-based key system on the platform.

CURATING CLOUD COMPETITION

Azure is still behind with some of its networking functions and identity-management capabilities, but those deficiencies are being addressed, Staten said. And while Azure has gotten better at big data by embracing Hadoop and third-party tools, it lacks a true competitor to Amazon Redshift, he added.

Azure also had a well-publicized outage in

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2014 and fell behind the competition in that area.

Still, Forrester predicts that Azure will generate the highest growth rate of any of the major cloud vendors in 2015. Survey data shows Azure trails only Amazon Web Services (AWS) in the U.S. in growth; in Europe, Azure's growth is outpacing that of AWS by a considerable margin, if customer survey responses are to be believed, Staten said.

Microsoft has taken a curator approach to Azure, which can be seen with its video service pack, mobile backend as a service and developer tools, Staten said. AWS users that signed up four years ago can deal with the incremental additions, but customers that sign up today

could be overwhelmed navigating the many options beyond the basics of Elastic Compute Cloud (EC2) instances and Simple Storage Service (S3). "Azure is doing a better job of curating and guiding you to the right capabilities, while not diminishing the breadth of services to you," Staten said.

That should be a concern for AWS because more developers are moving to public cloud—especially at large organizations, where employees have a mix of skill sets, Staten said. Most of those developers are looking only for best practices. These types of users don't want to build and configure workloads around DevOps, nor do they have the necessary technical skills to do so. —*Trevor Jones*

Microsoft, Third-Party Tools Cut Azure Management Complexity

PART OF MICROSOFT'S plan to decrease the complexity of managing Azure resources was to offer its customers native tools that can help along the way. There are several available options to use in conjunction with other tools—or separately—to assist with various tasks.

The **Windows Azure management portal** is the primary method for the platform's resource management. The portal allows users to manage all aspects of Windows Azure in addition to giving updates on enhancements for testing via its preview page. An updated portal features a rich GUI.

Azure PowerShell is a scripting language that is used by most roles and features in Windows server operating systems, with which almost all Azure resources can be managed. It can be used to perform a variety of tasks, both interactively at a command prompt and automatically through scripts. Azure PowerShell's main

advantage is that it gives you the ability to automate repeated tasks through PowerShell scripts.

Azure PowerShell is as robust as Unix shell. Its cmdlets perform the same tasks as the Windows Azure management portal, and can be used to create, test, deploy and manage services delivered through the Azure platform. A good way to learn Azure PowerShell is to explore these cmdlets. Also, Microsoft maintains a repository of Azure scripts in its Scripts Center.

The **Azure cross-platform command-line interface** offers users open source commands for working with Azure resources. The tool, called xplat-cli, offers functionality similar to what's found in the Azure management portal. While PowerShell cmdlets only work on the Windows OS, the xplat-cli allows non-Windows virtual administrators to interact with Azure resources from a variety of operating systems, including

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Linux, Windows and Mac.

If you have **System Center App Controller** already installed in your on-premises network, you can connect to your Windows Azure subscription, which allows you to easily configure, deploy and manage Azure VMs and services. Using App Controller, you can copy an existing VM to Azure, deploy VM templates to Azure and manage subscription settings.

If you have installed the **Windows Azure Tools for Microsoft Visual Studio**, you can view blob, queue and table data from your Azure storage accounts. Server Explorer, which is part of Windows Azure Tools for Visual Studio, allows developers to manage storage accounts created in Azure. It also provides for the creation of Azure VMs and the remote debugging of those VMs.

With its **Windows Azure AD Rights Management Administration Tool**, Microsoft provides a set of tools to encrypt and assign usage restrictions to cloud content. Rights management helps protect data created and exchanged via Microsoft Office and other applications. If you are an Office 365 customer or subscribe to Microsoft Online Services, you can download

the tool to start managing and configuring rights management capabilities for Exchange Online, SharePoint and Office applications.

Through the **Windows Azure and Service Management REST API**, software vendors and developers can extend Azure management capabilities by developing software applications. The REST API provides programmatic access to Windows Azure resources.

OTHER AZURE MANAGEMENT OPTIONS

There are several open source extensions of Azure management capabilities that aim to solve problems by using the REST API to access Azure blobs, tables and queues.

One option is the **Chef Knife Azure plug-in**. Although Azure PowerShell is a core scripting language for managing aspects of Windows Azure, it can be used only on a Windows OS. The team at Microsoft Open Technologies is collaborating with Chef, the open source DevOps tool, to enhance Azure's resource management capabilities.

Knife Azure is a plug-in that automates VM provisioning in Windows Azure. It allows users

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to spin up and manage instances directly from the command line, as well as manage, scale and rebuild an Azure environment with ease. Also, the Knife Azure plug-in can create perfect replicas of a production environment for development and testing purposes.

The **Azure Storage Explorer Tool** allows users to work with and manage Azure storage in the forms of blobs, queues and tables.

Like Azure Storage Explorer, **Azure Blob Studio** is a tool designed to work with cloud storage. This tool is a Windows Presentation Foundation application written in Visual Basic 2010. It allows developers to easily manage

files on their blob storage service on Windows Azure, for both the local developer account and your own account online.

Third parties have taken advantage of Azure's management complexity, releasing products that aim to simplify certain chores. One of the most prominent of these third-party tools is from Cerebrata. Using the **Azure Explorer tool** from Cerebrata, you can manage your Microsoft Azure blobs in one place. You can reliably upload and download blobs with a responsive UI. The tool allows you to transfer blobs among storage accounts and easily search and filter Azure blobs. —*Nirmal Sharma*

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