

# Microsoft Azure: What IT leaders need to know



## Microsoft Azure: What IT leaders need to know

Copyright ©2017 by CBS Interactive Inc. All rights reserved. TechRepublic and its logo are trademarks of CBS Interactive Inc. All other product names or services identified throughout this book are trademarks or registered trademarks of their respective companies. Reproduction of this publication in any form without prior written permission is forbidden.

### Published by TechRepublic

August 2017

### Disclaimer

The information contained herein has been obtained from sources believed to be reliable. CBS Interactive Inc. disclaims all warranties as to the accuracy, completeness, or adequacy of such information. CBS Interactive Inc. shall have no liability for errors, omissions, or inadequacies in the information contained herein or for the interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice.

### TechRepublic

9920 Corporate Campus Dr.  
Suite 1000

Louisville, KY 40223

Online Customer Support:

<http://techrepublic.custhelp.com/>

## CREDITS

### Global Editor in Chief

Jason Hiner

### Editor in Chief, UK

Steve Ranger

### Managing Editor

Bill Detwiler

### Editor, Australia

Chris Duckett

### Senior Features Editors

Jody Gilbert

Mary Weilage

### Senior Editor

Conner Forrest

### Senior Writers

Dan Patterson

Teena Maddox

### Chief Reporter

Nick Heath

### Staff Writers

Alison DeNisco

Brandon Vigliarolo

### Associate Editor

Amy Talbott

### Multimedia Producer/Editor

Derek Poore

### Associate Social Media Editor

Leah Brown

Cover art: iStock/cherezoff

## Contents

- 04 Microsoft Azure: What it is, why it matters
- 10 Use the free Azure price calculator to determine what services will cost before you sign up
- 12 Microsoft's biggest Azure feat? Getting its partner community on board with the cloud
- 14 Microsoft launches Azure Container Instances to easily bring Linux containers to the cloud
- 16 Microsoft improves Azure's analytical capabilities with Cloudfy acquisition
- 18 AWS Snowball Edge vs. Azure Stack: What on-premises public cloud means for your data center
- 20 Cycle Computing will make Microsoft Azure more appealing to more enterprises
- 22 Microsoft Azure Cosmos DB: A turnkey database system for business
- 26 About TechRepublic

# Microsoft Azure: What it is, why it matters

By James Sanders

The rise of cloud computing enables businesses to quickly provision computing resources without the costly and laborious task of building data centers and without the expense of running servers with unutilized capacity due to variable workloads.

[Azure](#), Microsoft's cloud computing platform, launched in February 2010. In addition to traditional cloud offerings, such as virtual machines, object storage, and content delivery networks (CDNs), Azure offers services that leverage proprietary Microsoft technologies. For example, [RemoteApp](#) allows for the deployment of Windows programs using a virtual machine, with clients on Windows, OS X, Android, and iOS using the program through a remote desktop connection. Azure also offers cloud-hosted versions of common Microsoft enterprise solutions, such as [Active Directory](#) and [SQL Server](#).

## Executive summary

- **What is Microsoft Azure?** Microsoft Azure is a collection of various cloud computing services, including remotely hosted and managed versions of proprietary Microsoft technologies and open technologies, such as various Linux distributions deployable inside a virtual machine.
- **Why does Microsoft Azure matter?** Azure lacks upfront costs or an appreciable time delay in resource provisioning—capacity is available on demand. With a usage-based billing formula, Azure is a compelling option for enterprises transitioning from on-premise Windows servers to the cloud.
- **Who does Microsoft Azure affect?** Azure can be used at any scale, from a garage startup to a Fortune 500 company. Because of the ease of transition, organizations with an existing Windows Server deployment may find Azure to be best suited to their needs.
- **When was Microsoft Azure released?** Azure reached general availability in February 2010, with additional services and regional data centers being added continually since launch.
- **How do I get Microsoft Azure?** New users receive a \$200 service credit good for 30 days when signing up for Microsoft Azure; the credit can be applied toward any Microsoft-provided service. Additional discounts and credits are available for startups, nonprofits, and universities.

## What is Microsoft Azure?

Microsoft Azure is a platform of interoperable cloud computing services, including open source standards-based technologies and proprietary Microsoft solutions. Instead of building an on-premise server installation or leasing physical servers from traditional data centers, Azure's billing structure is based on resource consumption, not reserved capacity. Pricing varies between types of services, storage types, and the physical location from which your Azure instances are hosted.

For example, [storage pricing](#) varies based on redundancy and distribution options. In the central US region, hot locally redundant block blob storage (LRS-HOT), with three copies in one data center, starts at \$0.0184 per GB. Geographically redundant storage (GRS-HOT), with three copies in one data center and three copies in a second geographically distant data center, starts at \$0.0368 per GB. Read-access GRS (RAGRS-HOT), which allows for read access at the second data center, starts at \$0.046 per GB.

In addition to the aforementioned storage, virtual machine, CDN, and Windows-related services, Azure offers a variety of other services:

- [Azure IoT Suite](#) offers various options for connecting and monitoring devices, as well as providing telemetry and analytics services.
- [HDInsight](#) is a customized [Hadoop](#) deployment.
- [Azure Redis Cache](#) is a managed version of the popular open source [Redis](#) data structure server; [Azure Cosmos DB](#) is a hosted NoSQL database for specific use cases; and [Azure Search](#) is an [OData](#)-based managed search service.
- [Azure Media Services](#) offers cloud-based video playing, indexing, transcoding, and content protection services.

Microsoft, in coordination with hardware vendors such as Lenovo, Dell EMC, HP Enterprise, and Huawei, offers the [Azure Stack](#) appliance for use in [hybrid cloud](#) deployments. The Azure Stack appliance allows organizations to run Azure applications from the public Azure cloud while leveraging data hosted on-premise, as well as running the same services from the public Azure cloud on the Azure Stack platform. Azure Stack is scheduled to ship in September 2017.

### Additional resources

- [Microsoft Azure Stack is ready to order from Dell EMC, HPE, and Lenovo](#) (ZDNet)
- [Windows Server on ARM: Microsoft moves beyond Intel in its Azure cloud](#) (ZDNet)
- [Want to run Windows 10 desktops virtually on Azure? Now you can](#) (ZDNet)
- [Microsoft's Azure IoT hub is now ready for business](#) (ZDNet)
- [Microsoft provides enterprise security progress report](#) (ZDNet)
- [Microsoft's Azure data services explained](#) (Tech Pro Research)

## Why does Microsoft Azure matter?

Azure, like other cloud service providers, lets you instantly provision computing resources on demand. Compared to the onerous task of planning and building an onsite data center, along with the requisite hardware upgrades, maintenance costs, server cooling requirements, electricity costs, and use of floor space—particularly for offices with associated real estate costs—the savings can add up quickly.

The benefits of Azure extend beyond cost control, however. The task of administering certain technologies, such as Windows Server, Active Directory, and SharePoint, can be greatly eased with the combination of Azure and [Office 365](#). This frees up IT staff to work on new projects rather than spending time on general system upkeep.

### Additional resources

- [Cloud is cheaper than VMs and containers for most new applications](#) (TechRepublic)
- [Azure's new autoscale feature makes VM deploys much easier](#) (TechRepublic)
- [Microsoft Azure adds impressive security, container, IoT, and file-sharing features](#) (TechRepublic)
- [Red Hat Enterprise Linux images now in Microsoft Azure Marketplace](#) (ZDNet)
- [15 essential support sites for Windows admins](#) (Tech Pro Research)

## Who does Microsoft Azure affect?

Organizations with an existing deployment of Microsoft technologies, particularly Windows Server and Active Directory, will find Azure to be a compelling upgrade. As Windows Server 2008 has reached the end of mainstream support, planning for a migration to cloud-hosted Azure services may be preferable to investments in new server hardware and Windows Server licenses.

As with any cloud service, the cost benefit is more real for cash-strapped startup organizations that lack the capital for provisioning hardware and associated costs of a traditional on-premise deployment or leasing dedicated servers in a traditional data center. Because the billing structure of Azure is based on resources used, turning to the cloud allows a company's IT backbone to scale with corporate growth.

Presently, 36 regions are available for use in Azure, and four new regions have been announced for future use. Compared to AWS and Google Cloud Services, Azure has a wider reach in developing markets, with more regions across Asia Pacific, and plans for regions in Cape Town and Johannesburg, South Africa [scheduled to reach general availability in 2018](#). Of the currently deployed regions, 14 are located in the US (six of which are government-use regions), two are in Canada, and one is in São Paulo, Brazil. In Europe, the United Kingdom and Germany have two each, while Ireland and The Netherlands each has one. (Two are planned for France.) For Asia Pacific, India has three, while Japan, Korea, China, and Australia each has two. Hong Kong and Singapore host one region apiece.

### Additional resources

- [Baidu will use Microsoft Azure services for self-driving cars](#) (ZDNet)
- [Azure IoT, Schneider Electric and WaterForce support sustainable farming](#) (ZDNet)
- [Microsoft Azure: Price cuts for virtual machines and storage services](#) (ZDNet)
- [Microsoft hones focus on enterprise mobility and security with Azure](#) (ZDNet)

- [Microsoft extends Azure Active Directory authentication with two new services](#) (ZDNet)
- [Complete IT Cloud Security & Hacking Training](#) (TechRepublic Academy)

## When was Microsoft Azure released?

The Azure platform was announced in October 2008 and reached general commercial availability in February 2010. Originally called Windows Azure, it was renamed to Microsoft Azure in July 2014. Additional service regions have been added continuously since the service was announced.

Azure Stack, the turnkey hybrid cloud solution offered by Microsoft and a number of hardware vendors, was first announced in [May 2015](#). With the [first technical preview in January 2016](#), organizations could use their own hardware as part of an Azure Stack deployment. This plan was subsequently walked back, with Microsoft [requiring users to buy a prequalified Azure Stack system](#), based on the belief that such offerings would perform better.

Under Microsoft CEO Satya Nadella, Azure has expanded to include support for a variety of Linux distributions available in virtual machines on the Azure platform. Presently, CentOS, Clear Linux, CoreOS, Debian, Oracle Linux, Red Hat Enterprise Linux, SUSE Linux Enterprise, openSUSE, and Ubuntu are supported in the Azure platform, as well as FreeBSD. [Azure also supports Docker images](#).

### Additional resources

- [Linux on Azure: What are your choices?](#) (ZDNet)
- [Microsoft's next step for Blockchain as a Service: Making it more usable by businesses](#) (ZDNet)
- [Microsoft releases preview of its Azure cloud bot-as-a-service](#) (ZDNet)
- [Microsoft Azure doubles its lead over Oracle, IBM](#) (TechRepublic)
- [Microsoft launches technical preview of Azure Stack as a hybrid cloud play](#) (TechRepublic)
- [Microsoft updates Azure Stack preview with promised services](#) (ZDNet)
- [Research: Cloud vs. data center adoption rates, usage, and migration plans](#) (Tech Pro Research)

## What services compete with Microsoft Azure?

One of Microsoft Azure's core strengths is the ease of transition for organizations looking to migrate from other Microsoft products, such as SharePoint, or integrate tightly with an existing Windows deployment. For those organizations, Azure is likely the most compelling option for a seamless transition to the cloud. Microsoft also [heavily touts compliance certifications for government users](#), noting that Azure was the first public cloud platform with a [FedRAMP P-ATO](#).

In terms of scale, Google, Amazon, and IBM are certainly capable of handling any amount of data or compute tasks you can generate. Amazon Web Services, much like Amazon itself, aims to be everything to everyone; as such, AWS has the most extensive portfolio of cloud services of any public cloud provider. Google Cloud Platform's core strengths are in machine learning, big data tools, and extensive container support. For IoT, the cloud provider market is still wide open, with tailored solutions available from [GE Predix](#), Samsung's [ARTIK Cloud](#), and [ThingWorx](#).

### Additional resources

- [Google Cloud Platform: The smart person's guide](#) (TechRepublic)
- [Amazon Web Services: The smart person's guide](#) (TechRepublic)
- [Multicloud: The smart person's guide](#) (TechRepublic)
- [Google vs Amazon: Who will win the cloud pricing war?](#) (TechRepublic)
- [Massive Amazon S3 leaks highlight user blind spots in enterprise race to the cloud](#) (TechRepublic)
- [How IBM plans to be the “undisputed leader” of the next cloud phase](#) (ZDNet)
- [IBM signs 10-year cloud services agreement with Lloyd's Banking Group](#) (ZDNet)
- [Microsoft realigns its cloud, AI, data organizations](#) (ZDNet)

## How do I get Microsoft Azure?

Microsoft's [BizSpark](#) program offers \$10,000 per month of Azure service credits for users of [BizSpark Plus](#) for one year for a total of \$120,000. Eligibility is dependent on collaboration with a [startup accelerator](#), and Microsoft is partnering with more than 200 startup accelerators in 47 countries.

BizSpark is available to privately held companies less than five years old that earn less than \$1 million annually. The standard tier provides up to \$750 per month (\$150 per month for up to five developers) for three years, for a total of \$27,000.

In 2016, Microsoft pledged to donate \$1 billion in cloud services to universities and nonprofit organizations over the next three years. Eligible organizations can register for free access at [Microsoft Philanthropies](#).

For individual developers, new registrants receive a \$200 platform credit applicable toward any Azure service, excluding third-party offerings in the Azure Marketplace. [New users can register here](#).

### Additional resources

- [Azure HDInsight click-by-click guide: Get cloud-based Hadoop up and running today](#) (ZDNet)
- [Cloud providers offer six-figure discounts to eligible startups](#) (TechRepublic)
- [Compliance could kill your cloud deployment: Here's how to handle it](#) (TechRepublic)
- [Microsoft wants to help solve the world's ‘unsolvable problems’ with \\$1bn cloud donation](#) (ZDNet)



- [Gallery: 10 books on cloud computing that all IT leaders should read](#) (TechRepublic)
- [Top 5: Things to know about cloud security](#) (TechRepublic)
- [Video: The most common mistakes companies make with their cloud strategy](#) (TechRepublic)
- [Video: Mistakes to avoid in a cloud migration](#) (TechRepublic)

# Use the free Azure price calculator to determine what services will cost before you sign up

By Mark Kaelin

With all of the articles, whitepapers, and blog posts describing the benefits of cloud computing published online over the years, you'd think most enterprises would have gotten the message by now. But that's not the case. There are still some holdouts clinging to old ways and outdated thinking.

Put simply, no matter what business you are in, and regardless of enterprise size, cloud computing offers quantifiable, measurable benefits at reasonable cost—benefits that can empower employees, inspire innovation, and increase profits. Not taking advantage of these cloud computing benefits is just bad business strategy.

One of the most often-cited obstacles preventing cloud computing deployment and adoption in the enterprise is the uncertainty of cost—both in the initial cost of deployment and in the recurring cost of daily use. Microsoft is attempting to alleviate this common obstacle by providing a cost calculator for its suite of cloud computing solutions known as Azure. The [Azure price calculator](#) is quick, easy, and free—how can you say no to that?

## Calculator

While using the Azure price calculator, it is important to keep in mind that Azure is not a single application, but a set of cloud-based tools—dozens of them. Some of these tools stand alone, while some are dependent on other tools in the suite for data. Therefore, while the calculator will certainly determine the cost associated with your choice of services, it also functions as a configuration manager to help you choose the right services for your enterprise and the task to be accomplished.

The multitude of available services under the Azure umbrella can be a bit overwhelming, and there are certainly more services than can be listed here. But the price calculator does a good job of laying out your options and then collecting your choices into a digestible summary.

For my example, I chose several services I would like to experiment with, specifically as they relate to Power BI, which I am researching for another project. My choices are:

- **Machine learning studio:** 10GB storage
- **Cognitive services:** A maximum of 5,000 transactions
- **Storage:** 10GB of files
- **Azure Active Directory:** Single person multi-factor authentication
- **Basic support:** Free

As you can see in **Figure A**, according to the price calculator, those Azure services would cost me \$2.38 per month, which is not likely to break the bank of any enterprise, let alone a one-man operation like mine.

The screenshot displays the Azure Price Calculator interface. It is divided into two main sections for service configuration and a summary panel on the right.

**Machine Learning Configuration:**

- REGION: South Central US
- FEATURE: Studio
- TIER: Free
- Summary: \$0.00/MO

**Cognitive Services Configuration:**

- API: Text Analytics API
- REGION: West US
- INSTANCE SIZE: Free \$0.00/Mo
- Max. transactions included 5,000
- Summary: \$0.00/MO

**Your estimate Summary:**

Service	Cost
Machine Learning	\$0.00
Cognitive Services	\$0.00
Storage	\$0.83
Azure Active Directory	\$1.55
Support Options	\$0.00
<b>ESTIMATED MONTHLY COST</b>	<b>\$2.38</b>

Buttons for "Purchase options" and "Export estimate" are visible. A disclaimer states: "Prices are estimates and are not intended as actual price quotes."

Figure A

Of course, as you add services, users, and capacity, the calculator will compute the additional cost and then add it to the total so you can see just how much the Azure services will cost. Raising the users for my choice of services from one to 10 would increase the monthly cost to \$23.53. Hardly what you would call a capital expense, especially if you compare Azure to on-premise servers and systems.

## Bottom line

Microsoft Azure offers dozens of useful cloud services for a reasonable price. Determining what services to purchase and how much they will cost does not require a committee or a series of tedious budget meetings. For SMB enterprises in particular, choosing Azure services can be accomplished with a simple and free-to-use price calculator.

Deploying cloud services for your enterprise is really not difficult or expensive, but deploying the *right* cloud services could be the catalyst your enterprise needs to rise above your competition. In just a few minutes, and with a few clicks of the mouse, you could join the cloud computing revolution. It could make all the difference in the world.

# Microsoft's biggest Azure feat? Getting its partner community on board with the cloud

Matt Asay

Microsoft Azure has emerged as a serious competitor for AWS, [reporting](#) 97% growth over the last year. As impressive as that is, however, it's nothing compared to how Microsoft has moved its partner community onto Azure, as well as its other business changes (like Office 365). If this doesn't sound like a big deal, consider that Microsoft announced at its Inspire conference that it has 800,000 partners who, in turn, employ 17 million people.

It's hard enough changing the behavior of one person, or even a handful. But *17 million*? Microsoft CEO Satya Nadella should get a statue in his honor for that.

## Follow the money

Granted, not all of those partners focus on Azure. Many work with Office 365, Xbox, or other Microsoft initiatives. Indeed, getting the exact number of Azure partners is a bit cumbersome. Yes, Microsoft has [20,000 companies selling through its Cloud Solution Provider program](#), but that refers to cloud resellers and managed service providers, a relatively small percentage of business partners that would build on Azure. Needless to say, with Microsoft's Azure business the focus of its overall business, that's where the bulk of its partner efforts are going, too.

Many of these partners have been with Microsoft for some time, focused on Windows Server. For these, it could be argued that such partners didn't have much choice if they wanted to stay in the Microsoft fold. Microsoft's mobile business evaporated, the PC market is in terminal decline, and Microsoft's server business was moving to the cloud. What else could they do?

Go to AWS, for one. ISVs, SIs, and others haven't supported Microsoft out of charity. They've done so because they've been able to make money. Indeed, for years Microsoft has been promoting its cloud business to partners as a way to accelerate their Microsoft-related revenues, [telling them in 2014](#) that cloud-centric partners were making 1.5X the profits as less cloudy peers.

## Moving heaven and earth

It has worked. A big part of Microsoft's Azure success, and key to its pitch to customers, is that Microsoft Azure is the best place to run hybrid workloads, among other things. This story becomes easier to sell if there is a deep bench of partners to call on to facilitate the journey.

For anyone who has worked on the sales side of an enterprise software company, Microsoft's partner momentum with Azure is nothing short of incredible. I have worked for large enterprise software vendors and

startups alike, and in both cases it's a slog to build a partner community. Moving that partner community as products and business priorities change, however, is... brutal.

This is true even when the obviously self-interested thing to do would be to change with the times. Back when I worked at Novell I saw sales professionals, as well as our partner community, stubbornly persist with NetWare even as the product was in decline. It was simply too hard to switch, even with a fresh new Linux product (SUSE) to jump to.

As Microsoft stumbled through its early forays into cloud, its partner community had every reason to bolt for AWS or other potential alternatives. En masse, they stayed, and Microsoft has since added new partners. Knowing as I do how hard this is, color me impressed.

# Microsoft launches Azure Container Instances to easily bring Linux containers to the cloud

By Conner Forrest

In July, Microsoft unveiled Azure Container Instances (ACI), a quick and easy way to deploy Linux containers in the cloud without much management or oversight. In a [blog post](#), Corey Sanders, the director of compute for Microsoft Azure, said that the ACIs were the “fastest and easiest way to run a container in the cloud.”

It takes only a few seconds to deploy an ACI, the post said, and each container deployed is then billed by the second, using billing tags. Admins can choose the number of vCPUs, the amount of memory, and more, to make sure the container will fit the application easily.

Role-based access control (RBAC) is offered for each instance, and no VM management tier or cluster orchestration tools are needed to get started. According to the post, “It is simply your code, in a container, running in the cloud.”

There are multiple deployment options for ACIs, starting with a template or the Azure command-line interface (CLI). However, users can also deploy from a Docker Hub or other public repository, as well as from a private repository. Microsoft uses virtualization to make sure each container remains isolated from containers deployed by other organizations.

Currently, container instances are available only for Linux containers. But Windows container support will be coming sometime in the coming weeks, the post said.

ACIs are not container orchestrators. Instead, they are intended to complement orchestrators as an additional “building block” for an organization’s container strategy.

As part of the announcement, Microsoft also launched the ACI Connector for Kubernetes, an open source connector allowing users to deploy ACIs from Kubernetes. So users will be able to get “on-demand and nearly instantaneous container compute” brought about by Kubernetes, specifically leveraging the portable Kubernetes API. Using this connector, organizations can deploy VMs alongside ACIs in the same cluster, allowing for instant bursting as well as long-term scalability.

This isn’t Microsoft’s first time working with containers. The firm also offers the Azure Container Service (ACS), a “container hosting environment optimized for Azure,” according to [its website](#). ACS is a free service (organizations pay for VMs) that integrates with Docker, Apache Mesos, and DCOS.

As microservices and containers continue to gain traction in the enterprise, Microsoft is working to keep Azure relevant to the emerging trends and technologies associated with it. If successful, Microsoft could better position Azure as a modern platform for the next generation of enterprise apps.

## Three big takeaways

- Microsoft unveiled a new method for deploying containers on its cloud platform called Azure Container Instances (ACI) that aims to speed and streamline the deployment process.
- ACIs are customizable by the amount of memory they have and their number of vCPUs, and they are billed by the second.
- A new ACI Connector for Kubernetes will also allow users to deploy ACIs through the Kubernetes cluster manager.

# Microsoft improves Azure's analytical capabilities with Cloudyn acquisition

By Mark Kaelin

As an industry, cloud computing services have matured to become a staple of information technology in the enterprise. Organizations of all sizes are using cloud computing to achieve economies of scale that could never have been reached with conventional on-premise solutions. But while the benefits of cloud computing solutions may be obvious, at least anecdotally, measuring the actual cost benefits can be a bit more elusive.

By acquiring [Cloudyn](#), a company that helps enterprises optimize their investments in cloud services, Microsoft is looking to add a toolset to [Azure](#) that can provide customers with a way to measure the cost benefits of cloud computing. It is an important step toward creating the dominant cloud services platform for business and confirms Microsoft's strategy of competing in a mobile-first, cloud-first world.

As cloud-based services have become so integral to business operations, the need to measure costs and manage the cloud network has become of paramount importance. Adding Cloudyn technology and solutions to the Azure toolset should enhance those capabilities for Microsoft customers.

## Taking measures

Microsoft confirmed the deal to acquire Cloudyn on June 29, 2017, for an amount speculated by [Wall Street experts](#) to be between \$50 million and \$70 million. The actual transaction amount is not publicly disclosed. Cloudyn and Microsoft were already close working partners, so the acquisition should not cause too much upheaval in terms of the technology. However, [Microsoft did announce a major restructuring and layoffs](#) the week after this acquisition.

Cloudyn technology provides enterprises with optimization tools to help automate the process of monitoring their cloud costs with analytics. It is important to note that the technology also works with competing cloud services like Amazon's AWS and Google's Cloud. Indications are that the Cloudyn solutions will continue to support multiple cloud services even after the acquisition is complete. How that will work in reality is not clear.

Enterprises deploying multiple cloud solutions across global boundaries need advanced analytical tools to monitor, measure, optimize, and manage those services. As cloud-based services have become so integral to business operations, the need to measure costs and manage the cloud network has become of paramount importance. Adding Cloudyn technology and solutions to the Azure toolset should enhance those capabilities for Microsoft customers.



## Bottom line

Over the past year or so, the deployment of cloud-based solutions has seen a marked increase across all enterprises, big and small. [According to a report published by Gartner](#) in February 2017, the worldwide public cloud services market is projected to grow to \$246.8 billion in 2017, up from \$209.2 billion in 2016. That's an 18% increase.

More and more, business is conducted via the cloud—it is now just standard operating procedure. That means the market for providing cloud services is about as competitive as any market can get. To stay in the game, Microsoft must take bold action to make Azure more alluring to a customer base clamoring for better and more efficient cloud solutions.

Enterprises must be able to take the abstract benefits of cloud computing—like agility, scalability, and efficiency—and put a concrete, measurable cost number on them. Microsoft plans to incorporate the innovative tools developed by Cloudyn into Azure to make taking those cost measurements as automated and as analytical as possible. In the long run, it could be this toolset that differentiates Microsoft from the rest of the industry.

# AWS Snowball Edge vs. Azure Stack: What on-premises public cloud means for your data center

By Keith Townsend

Amazon Web Services' (AWS) Snowball Edge and Microsoft Azure Stack both aim to bring a subset of the public cloud to the private data center. While both have the same high-level objective, they are very different approaches.

On the surface, the two solutions have faint similarities. However, both solutions are strategic to the two cloud providers' on-premises public cloud expansion.

## Public cloud at the edge

One of the largest stumbling blocks to public cloud remains system locality. There are still several use cases where organizations require micro-data centers at the edge of the network. The Internet of Things (IoT) proves a popular argument for having local compute, as the amount of data generated by IoT devices favors on-premises data processes. Another use case is integration with legacy systems—network latency to public cloud may prove too great an obstacle to place dependent workloads in the public cloud.

Enter on-premises public cloud, which aims to resolve the technical and business challenges of the edge. The basic concept of on-premises public cloud is to provide local cloud service with management existing in the cloud. Today's on-premises public clouds are only a forethought of what the future may bring. These solutions consist of hardware dedicated to a single customer and managed by a public cloud vendor. With future advancements in software-defined networking (SDN), public cloud providers create resource pools using customer premises equipment. This is not too dissimilar to Comcast's leveraging residential broadband for public hotspots.

## Snowball Edge

AWS introduced the original Snowball as a data transfer appliance. At the AWS Re:invent 2016 conference, however, Amazon announced the Snowball Edge. The Snowball Edge is a 4-node scale out appliance that acts more as a permanent installation instead of a one-time data transfer appliance.

Snowball Edge speaks to a trending public cloud feature known as serverless, in that it supports AWS Lambda code. As data objects are written to Snowball Edge, user-developed code can process that data. For example, in the IoT use case, an end user may identify temperature thresholds for an IoT sensor. As sensors write logs to Snowball Edge, the readings are compared against the threshold using Lambda code. If the temperature reading is out of range, Lambda could kick off a process by calling a script that may run on an external system.

## Azure Stack

Microsoft's Azure Stack is more of a traditional hyperconverged infrastructure (HCI) solution, sold by the company's OEM partners. I recently had Azure Stack's chief architect Jeffrey Snover on [The CTO Advisor Podcast](#), where he pointed out that Azure Stack is Microsoft Azure inside the customer's data center. While AWS Snowball Edge focuses on data and data processing, Microsoft seems a bit more ambitious with Azure Stack.

Azure Stack runs several of Azure's PaaS and IaaS services. In theory, a customer could replace an entire edge micro-data center with Azure Stack. Azure Stack is expandable to 12 nodes and, according to Snover, an Azure Stack customer can run as many as 400 large cloud virtual machine instances on a fully expanded Azure Stack deployment.

Both Azure Stack and Snowball represent the initial concept of providing public cloud computing at the edge. Customers gain the advantage of outsourcing infrastructure management to a public cloud provider but meet the technical and business requirements presented by edge computing. I'd closely watch both Azure Stack and Snowball Edge as both of these cloud providers expand the capability and reach of these systems.

# Cycle Computing will make Microsoft Azure more appealing to more enterprises

By Mark Kaelin



Image: Microsoft News

For years, TechRepublic has been touting the benefits of cloud computing for business enterprises. As information technology has evolved with ever-increasing innovation, those benefits have continued to multiply. Big data, IoT, artificial intelligence, and big computing all require computational power that often exceeds the capacity any single enterprise can provide. So unless your enterprise is extraordinarily large and technology rich, cloud computing is the only practical answer.

However, there are hurdles to overcome, both technological and cultural, before an enterprise can begin to take advantage of cloud computing computational services. No matter how many assurances are made, many enterprises are uncomfortable with the idea that their data will be “off-premises” on another system. In those situations, enterprises need specialized guidance.

In August 2017, Microsoft acquired [Cycle Computing](#) for an undisclosed amount. Cycle Computing specializes in helping enterprises orchestrate high-performance computing jobs, large data workloads, and other big computing jobs in the cloud. Microsoft will use Cycle Computing’s expertise to supplement the tools already in place for its Azure platform.

## Cycle Computing

Cycle Computing specializes in providing guidance to enterprises looking to use cloud-based high-performance computing (HPC) and other big computing, intense computational services. Successfully using those types of services requires a certain level of expertise that many enterprises do not possess and can't afford in-house.

Enterprises of all sizes are uncovering situations where the need for HPC services is obvious, but the path to taking advantage of cloud-based computational power is unclear. A company like Cycle Computing, with all of its tools and expertise, can provide guidance and reveal the correct path for these enterprises to follow.

According to the [announcement by Jason Zander](#), Microsoft will use Cycle Computing to help shore up its ability to provide support for Linux HPC workloads. By eliminating a potential hurdle for many enterprises seeking scalable computing power, Microsoft hopes to further accelerate the adoption of cloud-based solutions.

The acquisition confirms Microsoft's commitment to a business strategy that emphasizes its intelligent cloud services. Combine the acquisition of Cycle Computing with the July 2017 acquisition of Cloudfy and you can see a pattern emerging. Microsoft wants to make Azure the most complete, most versatile, and most user-friendly set of cloud computing services available. These acquisitions are designed to eliminate any and all barriers to cloud services adoption in the enterprise.

No matter how fantastic your service or product, the first barrier to overcome when establishing a new market is the inherent enterprise inertia and resistance to change of any kind.

## Bottom line

Whether it is increased storage capacity, a collaborative work environment, or super-computational power, it is obvious that Microsoft believes the answer is its intelligent cloud infrastructure and Azure services. The acquisition of Cycle Computing is just another piece of the overall full-service puzzle.

By offering the tools and experienced personnel necessary to orchestrate a sensitive big computing job, Microsoft believes it can make Azure and its myriad services more appealing to more enterprises. The previous success of Cycle Computing suggests that Microsoft may be correct in that assessment. Adding that kind of expertise to Azure will certainly help overcome enterprise inertia.

# Microsoft Azure Cosmos DB: A turnkey database system for business

By Mark Kaelin

Not too many years ago, building a globally distributed database system using your own data centers, your own connections, and your own precious resources required a great deal of planning and more than a little effort. In some instances, enterprises would determine that the cost of such a project was just too great to undertake, limiting company growth and business potential.

However, with cloud computing and the software-as-a-service (SaaS) business model, developing a scalable, globally distributed database for your enterprise—whether it is a one-person operation or a Fortune 100 company—can be just a few mouse clicks away.

[Microsoft Azure Cosmos DB](#) uses the inherent power of cloud computing to create a turnkey globally distributed database system that can expand and contract with your business needs. This guide provides specifics about Azure Cosmos DB and details on how to use it.

## Executive summary

- **What is Microsoft Azure Cosmos DB?** A turnkey globally distributed, multi-model database system sold by Microsoft as part of Azure.
- **Why does Microsoft Azure Cosmos DB matter?** It enables enterprises of any size to establish a global presence easily in a matter of minutes.
- **Who does Microsoft Azure Cosmos DB affect?** Any enterprise that does not have the technological infrastructure in place but that's looking to deploy a global database.
- **When is Microsoft Azure Cosmos DB available?** Azure Cosmos DB is currently available as part of the Microsoft Azure suite of cloud-based applications.
- **How can I get Microsoft Azure Cosmos DB?** Azure Cosmos DB can be acquired directly from Microsoft on the Azure website.

## What is Microsoft Azure Cosmos DB?

Microsoft Azure Cosmos DB is a turnkey globally distributed, multi-model database system sold under the SaaS model. Cost is determined by data throughput and used storage capacity. The more data throughput an enterprise uses, the more it will be required to pay.

Azure Cosmos DB gives customers the tools they need to scale both the computational power and the global distribution pattern required at any point, depending on business needs. The tools are supplied by the Microsoft Azure platform and its intelligent cloud AI technology.

## Specifications

Feature	Description
Turnkey	Established globally distributed database system driven by the cloud-computing power of Azure. Data can be automatically replicated in Azure data centers around the world.
Multi-model	Customers can use key-value, graph, and document data without worrying about schema or index management.
Multi-API	Data is automatically indexed, which allows customers to access their data with the API of their choice, including SQL, JavaScript, Gremlin, MongoDB, and Azure Table Storage.
Scalability	Customers can independently scale storage and throughput.
Five consistency levels	Defined consistency levels include strong, bounded staleness, consistent-prefix, session, and eventual.
Latency	Guaranteed less than 10-ms latencies on reads and less than 15-ms latencies on (indexed) writes at the 99 <sup>th</sup> percentile.
Reliability	Offered service level agreements (SLAs) include 99.99% high availability, with latency at the 99 <sup>th</sup> percentile.

## Additional resources

- [Inside Microsoft's Cosmos DB](#) (ZDNet)
- [Hyperconverged infrastructure: The smart person's guide](#) (TechRepublic)
- [Multicloud: The smart person's guide](#) (TechRepublic)
- [How Microsoft is differentiating Azure as the "business cloud" for the enterprise](#) (TechRepublic)
- [SaaS Research 2017: Adoption rates, business benefits, and preferred providers](#) (Tech Pro Research)

## Why does Microsoft Azure Cosmos DB matter?

Developing a proprietary, self-contained, globally distributed, multi-model database system from scratch requires a tremendous outlay of time and financial resources. In many cases, the cost of such a project is too much for an enterprise to undergo alone, which can limit the potential for business growth.

With Microsoft Azure Cosmos DB, enterprises of any size can establish a globally distributed database system that takes advantage of already existing data centers and infrastructures in a matter of minutes. Combine that with the administrative tools provided by Azure and Microsoft's intelligent cloud system, and enterprises can establish a powerful global presence quickly and easily without a major initial expenditure.

### Additional resources

- [Containers: The smart person's guide](#) (TechRepublic)
- [Azure: How Microsoft plans to boost cloud speeds with an FPGA injection](#) (TechRepublic)
- [AWS vs Microsoft Azure: Understanding the serverless application trend](#) (TechRepublic)
- [How to develop a cloud-first architecture and strategy](#) (TechRepublic)
- [Ebook: The cloud v. data center decision \(free PDF\)](#) (TechRepublic)
- [Cloud computing policy](#) (Tech Pro Research)

## Who does Microsoft Azure Cosmos DB affect?

Any enterprise, regardless of size, that needs to establish a flexible database system to meet business requirements may find the Microsoft Azure Cosmos DB a desirable choice. This is particularly true if business dictates that the database be globally distributed and scalable.

## Competitors

The main competition to Microsoft Azure and all the applications that make up the platform, including Azure Cosmos DB, are other large technology players like Amazon AWS, IBM, and Google Cloud Platform. Traditional database companies like Oracle also represent competition in this market.

### Additional resources

- [Google Cloud Platform: The smart person's guide](#) (TechRepublic)
- [AWS Lambda: The smart person's guide](#) (TechRepublic)
- [The Machine by Hewlett Packard Enterprise: The smart person's guide](#) (TechRepublic)
- [IBM Watson: The smart person's guide](#) (TechRepublic)
- [Three ways to get more from your vertical SaaS investments](#) (Tech Pro Research)



## When is Microsoft Azure Cosmos DB happening?

The Microsoft Azure Cosmos DB system is available now. However, because it is offered as a SaaS system, new features and applications will be tested and added periodically.

### Additional resources

- [Microsoft debuts Azure Cosmos DB, a superset of its DocumentDB service](#) (ZDNet)
- [Microsoft Azure launches 3 new tools to speed migration to hybrid cloud and optimize deployment](#) (TechRepublic)
- [3 ways to connect your private network to the public cloud](#) (TechRepublic)
- [Businesses can't blindly trust the Microsoft cloud—or any other cloud for that matter](#) (TechRepublic)
- [The cloud war moves to machine learning: Does Google have an edge?](#) (TechRepublic)
- [Research: Cloud vs. data center adoption rates, usage, and migration plans](#) (Tech Pro Research)

## How do I get Microsoft Azure Cosmos DB?

Customers seeking to establish an Azure Cosmos DB database should visit the [Microsoft Azure](#) website. The system is one of the many applications offered under the auspices of Azure.

Pricing for Azure Cosmos DB is based on provisioned data throughput, measured in reserved RUs / second and storage usage, measured in GB / month. The standard current rate according to the Microsoft Azure website is:

Unit	Price
SSD Storage (per GB)	\$0.25 GB/ mo
Reserved RUs / second (per 100 RUs, 400 RUs minimum)	\$0.008/hr

### Additional resources

- [Azure Cosmos DB Pricing Details](#) (Microsoft)
- [PowerShell: The smart person's guide](#) (TechRepublic)
- [Is the cloud really just someone else's computer?](#) (TechRepublic)
- [The cloud age is finally upon us, report says](#) (TechRepublic)
- [Will cloud vendors dominate machine learning? Early signs point to yes](#) (TechRepublic)

## About TechRepublic

TechRepublic is a digital publication and online community that empowers the people of business and technology. It provides analysis, tips, best practices, and case studies aimed at helping leaders make better decisions about technology.

### Resources

**Subscribe to our [free newsletters](#):** Stay on top of business technology trends, learn about innovative new products, and hone your skills with our how-to's and tutorials.

**Check out the [TechRepublic discussion forums](#):** Touch base with your peers and share tips, advice, solutions, and opinions.

**Catch the latest [videos](#) and [photo galleries](#):** Our video library offers interviews with entrepreneurs, IT pros, and CXOs; short clips on the latest tech news; and overviews of emerging technologies. Our galleries offer a look at everything from the hottest mobile devices to autonomous cars to the gadgets, tools, and accessories that are headed your way.