Microsoft AZURE
and the Microsoft Cloud

An introduction

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Introduction

Cloud computing is now one of the biggest necessities for any business that carries out web-based operations, with public clouds expected to rise to almost $180 billion in 2018. With forecasts like this, every business should be fully aware of ongoing trends and all the latest technology that drives cloud computing on its onward journey.

Together, Microsoft, Google and AWS are expected to take a 76% share of the revenue generated by cloud platforms in the year ahead and with estimates like that, its' time to discover the best solution to move your business forward.

If you already use Microsoft Windows and you already make good use of the product suite that Microsoft offers then it makes sense to move forward using Microsoft Azure. And, if you don't use Microsoft yet, Azure is open source so, regardless of your operating system and current products, it is the most accommodating cloud platform in the world.

Microsoft Azure provides us with a public cloud application platform, offering a huge range of services, from computing, storage, analytics and networking, all the way up to AI and machine learning. With Azure you can choose the services that suit you and pay only for what you use. If you need more you pay more; need less, your bill goes down.

Azure also offers several different compute models, the tools needed to create virtual machines, completely secure web apps and offers full hybrid integration services so you can optimize what you already have and incorporate the extras seamlessly and with the minimum disruption to your business.

With the Microsoft cloud, you get a range of SDKs to help you develop versatile applications, a fully scalable cloud service, economy without any adverse effect on your operations and a fully secure, managed platform to work on.

Throughout this guide, you will learn what cloud computing is all about and how Microsoft Azure can help you to migrate and run your business from the cloud, either in full or in part.

Your cloud, your choice.

Cloud Computing

What is Cloud Computing?

In a nutshell, we can describe cloud computing as a system that delivers multiple computing services across the internet:

- Storage
- Servers
- Databases
- Intelligence
- Analytics
- Software, etc.

Right now, cloud computing is a phrase you will hear everywhere; run a quick Google search and well over 100 million results will appear. It started out as just a way of offering storage on the internet but has progressed fast over the years and now there is

little that you cannot do with it. Most companies use the cloud on a PAYG (pay as you go) basis, paying only for what they need as a way of reducing costs.

Cloud Computing And Business

It doesn't matter whether you run applications that allow photos to be shared among millions of smartphone users or whether you are providing support to some of your more critical business operations, cloud computing allows fast access to IT resources that are both low cost and incredibly flexible. There is no need for huge payments upfront to invest in hardware or in the management of that hardware. Instead, with cloud computing, you simply determine exactly how much and what type of resources you require and provision them. There are no limits to how many resources you can access, it is virtually instant and you pay only for what you have used.

There is no doubt that cloud computing makes things much easier for businesses. No longer do they need that heavy infrastructure or need to own their own data center; instead, they simply rent what they need – processing power, applications, storage and so on, from a cloud computing service provider. Front-end costs are much lower with the company paying only for what they need; as they grow, so their usage can grow with full flexibility and on demand. Not only that, the business is no longer responsible for any updates or maintenance as that is all down to the service provider.

There are two types of cloud – public and private. Companies are not responsible for the upkeep of the public cloud whereas, with a private cloud, the maintenance is down to the business and is located at the physical location as on-premises or remotely at a data center. Private clouds tend to be more for sensitive data as they are more secure.

Today a popular solution is the combination of the public and private cloud, with the advantage of workload distribution for better performance. This is called a hybrid cloud. There is also a variation of a community cloud, with cloud solutions created and maintained by several organizations in collaboration with one another.

How Cloud Computing Works

Every cloud computing service works in a different way but where most of them seem to come together is in the user-friendly dashboard they provide, browser-based and easy for both developers and IT professionals alike to find and order what resources they need and carry out account management. Some of these services also work with a command line interface and with REST APIS, providing developers with several options to choose from.

The way it works is actually very simple and cost-effective. Instead of businesses having to fork out for expensive hardware or rent that hardware from another data center, they

simply pay to gain access to a huge pool of resources provided by, in this case, Microsoft. These resources allow the business to host email and web servers, file storage serves, databases, user directories, software, virtual machines; the list goes on.

As a business grows and their requirements become more intensive, instead of having to upgrade their existing physical hardware, at huge expense, they can just purchase more from the cloud. Cloud computing provides all the resources a business could possibly require and, as demand grows, those resources are assigned as needed.

Let's say, for example, that you are one of the executives for a large business. Your job responsibilities include ensuring that all company staff is served with the hardware and software they need to get their jobs done efficiently and effectively. Yes, every member of staff has the computer they need but it doesn't stop there; software licenses and software must also be purchased. When you hire new staff, you have to do it all again to ensure they have what they need. Stress levels can easily get out of control!

Cloud computing takes the hard work and the stress out of the job. Rather than having to install the right software on the right computers for each individual member of staff, because they won't all need access to the same, all you would need to do is install one simple application. From there, your staff log in and access a service hosted on the web; that service provides access to all the programs they need to do their jobs and all you need to do is provide user permissions. Everything else is done remotely – from basic email hosting to the most complex programs for data analysis.

No longer do local computers need to do the heavy lifting in terms of running the applications. The cloud, made of a huge computer network, does it all for you. Demands for software and hardware decrease and all your computer system needs to do is run the cloud interface software for the system you choose.

Most of us already use cloud computing – email services like Yahoo!, Hotmail and Gmail are all on the cloud as are many other services you use regularly.

The Benefits of Cloud Computing

Cloud computing is bringing about a huge shift in the way business is done. Rather than wasting time with traditional resources for IT, companies are turning to the cloud for their requirements and there are several reasons why. Cloud computing provides plenty of benefits to all users:

- **Cost**

With cloud computing, businesses no longer need to purchase expensive hardware and software, nor do they need the expense of running their own datacenters. That, in turn, eliminates the cost of 24/7 electricity to run huge banks of servers and fan systems to keep them cool and the need for IT experts to ensure the infrastructure is properly managed. The cost savings are huge.

- **Speed**

Most of the cloud computing services are on demand and self-service so it can take just minutes to provision even the largest amounts of resources; all it takes is a couple of

clicks on the mouse and a business has vast amounts of flexibility, not to mention reducing the need for capacity planning.

- **Global**

One of the biggest benefits of cloud computing is the global scaling ability. Companies can deliver the exact amount of resources required, be it power, bandwidth, storage, etc., where and when it is needed and from the most suitable geographic location.

- **Increased Productivity**

With an on-site datacenter comes a lot of work in setting up hardware, managing it, patching software and many other IT jobs that take time. With cloud computing, much of that need is taken away and performed remotely, by the cloud service and that leaves the IT teams with more time on achieving all their other goals.

- **Better Performance**

Some of the largest cloud services are run on a huge network of data centers across the world, all secure and all kept updated and upgraded regularly to ensure they are the fastest and most efficient hardware possible. Compared to an on-site data center, this provides reduced latency, and far better scaling economies.

- **More Secure**

Most cloud computing services provide the technologies, policies and controls needed to ensure full security. This keeps your data, your applications and your infrastructure much safer from potential threats.

As you can see, the benefits of cloud computing far outweigh any potential downsides, which is why so many businesses have turned to it.

The Different Types Of Cloud Computing

Not all the cloud computing services are the same and no one service will suit every user. To that end, several different types, models and services have become available over time and we now have three main cloud deployment types. The first step is to determine which type of architecture or deployment you require:

- **The Public Cloud**

Public cloud services are owned by third-parties who operate and deliver the resources across the internet. Microsoft Azure is a perfect example of a public cloud service; all the software, hardware and any other infrastructure requirements are fully managed by the provider and access and account management is via a web browser.

- **The Private Cloud**

Private clouds are those that provide resources exclusively to a single organization or company. The private cloud is generally located physically on the on-site datacenter although some companies do pay for a third-party provider to host that cloud. All resources and services are maintained and managed on one private network.

- **The Hybrid Cloud**

Hybrid clouds are a combination of the public and private, tied by technology that allows for the sharing of applications and data between them. When applications and data can move in between the two, you get much more flexibility, more options for deployment and better optimization for the infrastructure you already have in place.

Different Cloud Services

There are four main categories for cloud services and these are often termed as a "stack" because each builds on the last.

- **IaaS – Infrastructure as a Service**

The basic cloud service category, IaaS allows you to hire your servers, VMs, networks, storage, operating systems, and any other infrastructure you require, on a PAYG basis from the provider.

- **PaaS – Platform as a Service**

This refers to services that supply the environment for development, test, delivery and management of software applications on demand. This makes the development of apps much easier as there is no need to worry about the underlying infrastructure.

- **Serverless Computing**

Together with PaaS, serverless computing makes building web and mobile app functionality easier, reducing the need to manage the infrastructure and servers. The entire setup is handled by the provider and, being event-driven, resources are used only when a trigger or function happens.

- **SaaS – Software as a Service**

SaaS is a software delivery service; applications are delivered on demand across the internet and are usually subscription-based. The cloud provider hosts the application and manages it, along with the infrastructure it requires, along with maintenance, including upgrades and patches.

Uses of Cloud Computing

Most of us don't realize that we actually use cloud computing regularly; you're probably using this very minute without even knowing. If you use an email service provider, an online service for document editing, if you listen to music or watch TV over the internet, play internet-based games, use online storage for files, photos or music, then there is a good chance that cloud computing is running it all for you.

It is barely 10 years since the very first cloud computing services came into being but already we are seeing vast numbers of businesses, from the very smallest to the global biggies, even non-profits and government agencies, using the technology in one way or another.

So, what can we do with cloud computing?

- **Apps and Services**

We can quickly and easily create and deploy all kinds of applications – mobile, web, and API – on just about any platform. The resources required to meet performance objectives, along with security and compliance, are all available at the press of a button.

- **Applications**

Reduce the time and the cost of developing and testing applications by making use of the cloud infrastructures that can be scaled easily to your requirements.

- **Data**

Better and more cost-efficient data protection on a huge scale; your data can be transferred via the internet to cloud storage that is offsite but easily accessible from any device and any geographic location. Your data can also be backed up and recovered easily.

- **Data Analysis**

Your data can be unified across any team, location or division in the cloud. You can then make use of the cloud services on offer, such as artificial intelligence and machine learning, to analyze that data to make better and more informed business decisions.

- **Audio and Video Streaming**

You can connect to your audience anytime and anywhere on any device that has high-definition audio and video with truly global distribution abilities.

- **Intelligence**

Make use of intelligent models to gain insight from captured data and engage better with your customers.

- **SaaS**

The ability to deliver software on demand allows for the most up to date versions of software to be delivered easily and kept fully up to date for all customers, at any time and anywhere.

Microsoft Azure

What is Microsoft Azure?

These days, although cloud computing is the most popular way of managing IT resources, plenty of companies are still concerned about migrating over to it. There are fears about security, downtime, and availability, all of which keep some companies standing still, staying with tech that is fast going obsolete.

This is where Microsoft Azure steps into the picture. Microsoft has one of the fastest growing networks of data centers in the world and Azure is their way of leveraging that network to provide a cloud platform that lets anyone build services or applications, deploy them and manage them easily. Azure provides cloud computing capabilities to your network using PaaS (Platform as a Service) or you could go the whole hog and hand your entire network and computing needs over to Microsoft to manage for you using IaaS (Infrastructure as a Service).

Regardless of the option you chose, Azure provides reliable and secure access to data, along with a range of products that is ever expanding to meet the needs of its clients, all through a simple, easy to manage platform.

What Does Azure Do?

Microsoft has a large, well-maintained directory offering Azure services and this is being added to all the time. Everything you need to build your virtual network is there, along with everything needed to deliver applications or services:

- **Virtual Machines –** use any one of the many templates or use your own machine images to create a Linux or a Microsoft virtual machine in just a few minutes to host services and apps.
- **SQL Databases –** Azure offers Managed relational databases as a service, with no limit on how many you use. This equals time and cost savings on software, hardware and IT experts.
- **Azure Active Directory Domain –** using the technology that powered Windows Active Directory, this one allows you to manage authentication, group policy and anything else remotely, making it simple to move your security structure over to the cloud.
- **Application Services –** Azure makes it simple to create applications that are compatible with all portable and web platforms and deploy them globally. Azure WebApps makes it easy to manage the production of applications, testing and deploying them quickly and there are a series of ready-made APIs for the more popular cloud services.
- **Visual Studio Team Services –** an Azure add-on, this provides a complete cloud solution for Application Lifecycle Management, providing developers with the ability to share code changes, track them, load test and deliver their applications globally.
- **Storage –** lastly, Azure provides secure data storage that is fully accessible and competitively priced.

Why Do Companies Use Microsoft Azure?

On-site data centers are fast going out of fashion, much like dial-up internet and mainframes already have. Cloud solutions are everywhere now, far more affordable and efficient and thousands of companies are busy migrating their business to the cloud as we speak. With so much choice in the cloud arena, why are some of the biggest companies in the world, like BMW, 3M and GE, choosing Microsoft Azure as their choice of cloud?

Some of the reasons are:

- **Flexible –** Azure allows you to scale your storage and services on the fly; no more having to upgrade physical hardware or updating/purchasing/deploying new operating systems to get the power your business needs.
- **Cost –** Azure offers cheaper, more cost-effective solutions to adding and scaling your infrastructure, eliminating the need to purchase physical

hardware, services and infrastructure, not to mention the cost savings in IT experts.

- **Applications –** Azure offers a huge amount of services, including on-demand storage, a range of Visual Studio applications and more. With Azure, app development, testing and deployment are a breeze and you get the advantage of significant savings on licenses when you migrate your apps to Azure.
- **Disaster Recovery –** Azure offers a high-speed, decentralized infrastructure that fits in with any Disaster Recovery plan; critical applications and data can continue running during recovery and, rather than days or weeks, recovery is done within hours.

The combination of the huge infrastructure Microsoft has, constant development of apps and services and their extremely powerful place in the IT marketplace ensures that Azure is the choice of almost all Fortune 500 companies in the world. But because it is infinitely scalable, it fits all companies of all sizes.

One area where Azure does excel is in logging, offering features like:

- Logging and health monitoring to ensure the integrity and safety of your data. Know instantly if your infrastructure is suffering outage or performance issues and set alert levels for diagnostics, Windows IIS logs, crash dumps, and custom error logs.
- Unified Logs and Metrics; provided by Sumo, a trusted Microsoft partner, this unifies your metrics and logs from your whole cloud environment using machine learning to process the data.

It won't be too long before on-site data centers are a thing of the past. More and more businesses are making the leap to cloud computing using Microsoft Azure to keep their businesses in the move and up to date.

Is Microsoft Azure Secure?

if there is one thing that Microsoft takes very seriously it is security and the Azure platform is the perfect example. The Security Development Lifecycle ensures full security at every step and is continually updating Azure. Building on that is the Operational Security Assurance, supplying a framework that provides full security for all cloud services for their entire Lifecycle. And the Azure Security Center ensures that Azure is the only public cloud that offers security-health monitoring on a continual basis.

Azure Security Center

With Azure Security Center, you get a unified view of your security across all cloud and on-site workloads.

- Apply security policies across all workloads to comply with security standards
- Analyze security data
- Monitor security continuously using built-in assessments or provide your own and take advantage of actionable recommendations
- Reduce threat exposure with adaptive protections
- Block unwanted programs, code and other malware using customized application controls that use Machine Learning algorithms
- Control access using 'just in time' permissions to reduce network attacks
- Take advantage of the advanced logging and analytics tools built in to keep ahead of the constantly evolving world of cyber attacks

User and Data

Active Directory offers help on managing identities and securing resources using security features such as

- Multi-factor authentication
- Identity protection
- Conditional access
- Access review
- Privileged Identity Management
- Key vault to protect cryptographic keys and password using industry standard encryption techniques.

On top of that, Azure also offers real-time monitoring and protection against DDoS, SQL Injection attacks, cross-site scripting, session hijacks and more.

How can Azure help if I outsource my IT?

Microsoft Azure makes outsourcing IT incredibly simple. With Azure, you get a huge choice of trusted solutions partners that can assist you in deploying and managing the solutions you already use as well as offering solutions that are ready-made or customized to your business. And, if you need one, Azure can help you to locate a highly experienced managed service partner or the one you already have can be made into an Azure partner.

IT and Business Solutions

Azure offers two marketplaces, both offering vast catalogs of consulting services, products and end-to-end solutions that include community software apps, open source apps, add-ons and data.

AppSource

AppSource provides hundreds of line of business apps for their particular industry along with apps that will help them get more out of the solutions they are already using. There are plenty of SaaS apps on offer, both from Microsoft and from their trusted partners

and you can also find the building blocks for Azure, virtual machine images, IT services, solution templates and other finished software solutions.

AppSource apps are built on Project Madeira, Microsoft Dynamics, Office 365, Power BI, Azure and on Cortana Intelligence Suite.

Azure Marketplace

Azure Marketplace offers cloud software solutions that have been built on or for Azure. Included in the catalog are more than 8,000 listings, including virtual machines, solution templates, APIs and SaaS apps, along with other Azure building blocks. The technical services and solutions on offer in Marketplace come from both Microsoft and their trusted partners and are designed to extend existing Azure services and products. Multiple categories of industry are on offer, including security and identity, databases, base operating systems, blockchain, developer tools, networking and many more.

Microsoft Solution Partners

In a bid to help any business with their outsourcing requirements, Microsoft has teamed up with thousands of Azure Expert Partners who all deliver managed service, next-generation capabilities with full expertise that has been fully verified by an independent auditor. Some of those partners include:

- Datacom
- Coretek Services
- CloudDirect
- Accenture
- Capgemini
- IBM
- NordCloud
- Smartronix
- Telstra

What Other Customers Are Using Azure?

It might just interest you to learn that around 90 of the global Fortune 500 companies have entrusted their business to Microsoft Azure and they are achieving some spectacular results with it. Some of the businesses that use Microsoft Azure include:

- **Johnson Controls –** using a cloud-based IoT solution to create smart cooling and heating systems
- **AP Moller-Maersk Group –** Digitalized their global logistics and transport to make operations more efficient
- **Grisard Management AG –** a petroleum company that uses Azure to run SAP and have trimmed their costs by around 40%
- **Pacifico Seguros –** uses a cloud solution to manage their complex portal architecture centrally
- **ASOS –** a huge online retailer that delivers state of the art online shopping using cloud databases
- **Adobe –** uses Azure global cloud solutions to create and deliver digital experiences
- **HP –** use Azure AI to make its customer support experience second to none
- **Gulf Warehousing Company –** Uses Azure disaster recovery places to keep their supply chain and logistics company safe
- **Exxon Mobile –** use IoT and cloud solutions to optimize their operations and grow
- **HomeEXCEPT –** uses IoT Hub for remote and nonintrusive home monitoring
- **Techcom Securities –** top securities firms use the cloud to boost business growth, customer levels and development
- **SysCloud –** uses AI to help keep children safe online
- **Zone.TV –** uses Azure and AI to personalize television viewing
- **Ahold Delhaize –** uses AI and data to personalize shopping experiences
- **Qantas Airways Limited –** uses Microsoft 365 to keep their airline personnel connected and keep people on the move
- **Icahn School of Medicine at Mount Sinai –** uses Microsoft Genomics to help determine and discover genetic risk factors for cancer
- **Bing Ads –** their analytics team uses Azure SQL database to keep costs down and performance up
- **Allergan –** Pharmaceutical giant uses Azure to drive a collaboration between Yammer and Microsoft 365
- **Asahi Kasei Corporation –** huge global manufacturer brings multidivisional partners and employees together through the cloud

This is just a tiny selection of the many thousands of success stories from companies that use Microsoft Azure to power their business.

Is It Only For Windows Apps And Services?

Absolutely not. Microsoft Azure offers full support for open source technology so you can pick and choose the technologies and tools that suit you. You can use your own operating system, your own device, your own data source to run your applications.

Microsoft Azure is a flexible and open cloud platform that provides support for multiple programming languages, operating systems, tools, frameworks, databases and devices – whatever your requirements are, Azure has the answer. If you are using Linux, PHP or Java web application platforms, Azure provides full IaaS support, including full development and testing resources for Linux and all your open source components.

With Azure Marketplace, you will find the highest quality support for all of the most popular Linux distributions, cover all your mobile backend requirements with the Marketplace template and Parse Server, and build your mobile and web applications with support for Python, Node.js, Java and PHP web programming languages.

With one managed platform you can run your Windows and Linux applications, and scale them too, easily and with little effort on your behalf. And, using what you already have, the applications you already built, you can team up with Azure in multiple ways:

- Use Azure Active Directory to add identity and access management to any application, regardless of platform
- Use Azure Data Lake Analytics to gain insights
- Connect PHP portals to SharePoint sites
- Support .NET applications with Linux batch processes

- Use Visual Studio to make shipping mobile and web apps easier – iOS, Mac OS, Android and Windows
- Connect to Bitbucket, GitHub and Visual Studio Team repositories
- Take advantage of the many open source APIs and SDKs to integrate any App Center service you need with your own analytics solution or beta testing platform.
- And many more ways.

And it doesn't stop there; Microsoft even extends their open source commitment to their pricing plans. You have the opportunity to provision and discard Linux VMs, paying by the minute for exactly what you use, no more, no less. With Azure App Service you have everything you need at your fingertips to create mobile backends, websites, web applications and more for any platform or any device, choosing from a multitude of pricing plans to suit your business needs, all billed on a per-second basis.

Microsoft Azure really is one of the most open-source cloud platforms ever developed for the business market, providing a fully managed service for everyone.

Will Azure Really Save Me Money?

Because there are no costs to pay upfront with Microsoft Azure, you pay only for what you are using. With Azure, you get a choice of flexible pricing and purchasing options for any cloud scenario you can think of, along with an extensive range of tools and services to help you manage what you spend.

How You Save

- **Reserved VM Instances –** up to 72% cheaper than PAYG with a one or three year upfront plan that you can cancel or change at any time.
- **Azure Hybrid Benefit –** make huge savings in migration when you use your existing on-site SQL Server or Windows Server licenses together with Software Assurance
- **Development and Test Pricing –** discounts offered for ongoing testing and development, no software charges from Microsoft on Azure VMs and special prices for other services.

Example Pricing

- **App Service –** free for 12 months then starting from $0.013/hour
- **Virtual Machines –** free for 12 months then starting from $0.08/hour
- **Azure SQL Database –** 250GB free for 12 months, prices start from $0.021/hour
- **Blob Storage –** 5GB free for 12 months, prices start from $0.002/GB

- **Azure Kubernetes Service (AKS) –** Free for 12 months, then prices start from $0.008/hour
- **Functions –** 1 million requests free every month, prices start from $0.20/million executions

A Pricing Calculator is provided to help you estimate your monthly bill and the billing portal helps you track your usage at all times. A TCO (Total Cost of Ownership) calculator can help you to estimate how much you can save by moving your business to Azure.

Service plans are also available in several flavors, including:

- **Basic –** starts at $0.030/hour
- **Standard –** starts at $0.040/hour
- **Premium –** starts at $0.080/hour
- **Isolated –** starts ate $1.60/hour.

Cost Management, what used to be known as Cloudyn, is a free service that provides tools that help you monitor your costs, allocate and optimize them with complete flexibility, allowing you to tailor your pricing and manage your spending with ease.

Can I Try Azure Services?

Yes you can. You can set up a free trial account with Azure immediately and be up and running inside of 10 minutes at the most. Microsoft offers plenty of tutorials on how to get started and how to begin building projects and they also have plenty of freebies on offer.

Anybody can set up a free account unless you have already had an Azure account before, either a paid one or a free trial.. Microsoft will give you $200 worth of Azure credits when you sign up and these must be used within the first 30 days or you will lose them – they can be used on most Azure services. Plus you also get 12 months free on selected services and access to over 25 Azure products that are always free.

Once your credits have been spent or your 30-day trial is up, whichever comes sooner, you will be asked to sign up to a PAYG subscription by lifting the spending limit. This will let you continue to use the free account and the selected free services. Provided you keep within the limits offered by the free services, then you will not need to pay anything.

If you opt not to upgrade at the end of your free trial, all products will be removed and, should you want to try it again, you will need to sign up for a PAYG subscription.

Signing up for your free account really is very simple. All that is required is your phone number, a debit or credit card, billing details and a Microsoft account username. Although the service is free for the 30-day trial, your debit/credit card and phone number are required to verify that you are a real person. You are not charged anything, other than a verification hold of $1, which is removed within a few days.

With the Azure free account you get access to all of the Azure products, some completely free. You are not limited to using your account for development only; just be aware that, if you go beyond the free quantities of resources offered, you will be billed for them.

The free account is available in all countries where Azure is available and is a great way of trying Microsoft Azure before you opt to pay for any of the services.

For new businesses, it provides the perfect opportunity to see exactly what Microsoft Azure can do for you and how it can save you money, while bigger businesses can use the free account to get an idea of whether Azure is right for their business and how much they can save by migrating their existing business over to Azure.

Will Azure Work For My Industry?

Microsoft Azure provides solutions for every industry, bringing cloud products and services together to meet the specific requirements of your industry driving innovation further than ever before.

- **Government**

Microsoft Azure helps government agencies improve the way they serve citizens and protect them by helping to build fully secure cloud solutions. They help to improve efficiency by providing cloud-based portals where citizens can contact their government agency easily, as well as connecting cross-department employees with one another and providing facilities to file reports from out in the field.

- **Financial Services**

With Microsoft Azure, financial service businesses can provide customers with a secure platform with ever-evolving investment to meet all threats. A full set of analytics tools provides everything a business needs to optimize services and customer relationships are targeted and stronger.

- **Retail**

Retail businesses can benefit from analytics to help them offer a much better and more tailored shopping experience, increasing revenue and customer satisfaction. Plus employees can make use of tools that improve productivity, make collaboration easier and generally provide a much better customer service.

- **Manufacturing**

Provide a much better customer experience with targeted offers, services and features and build up brand loyalty by improving product designs. Use analytics tools to help improve customer service and productivity and use IoT to streamline your manufacturing process.

- **Health and Life Sciences**

Azure is helping health and life science organizations the world over to save costs, improve efficiency, empower healthcare teams and engage customers with a secure cloud platform, all the while harnessing the full power of technological innovation.

- **Gaming**

With a whole host of tools at your disposal, you can build bigger and better games and use Azure to scale them globally. Make use of a set of development solutions and all the building blocks you need for a successful game.

How Does Azure Compare to Other Clouds?

Microsoft Azure is being used by more than 90% of the Fortune 500 companies and that alone says enough. Businesses everywhere, small ones and large, rely on Microsoft Azure to provide them with a fully trusted and managed secure cloud service.

With Azure, you get:

- More regions than any of the other cloud services on offer
- A consistent hybrid cloud, the only one in the world
- Unsurpassed and unrivaled developer productivity
- Comprehensive compliance coverage, including full compliance with the new GDPR rules.

Microsoft has been providing services to enterprise customers for more than 30 years and they have one of the largest and most experienced networks of partners in the world, with more than 68,000 partners waiting to support your every business requirement.

And if compliance is an issue for you, Microsoft Azure has more than 70 certifications, the most comprehensive set offered by any cloud service provider.

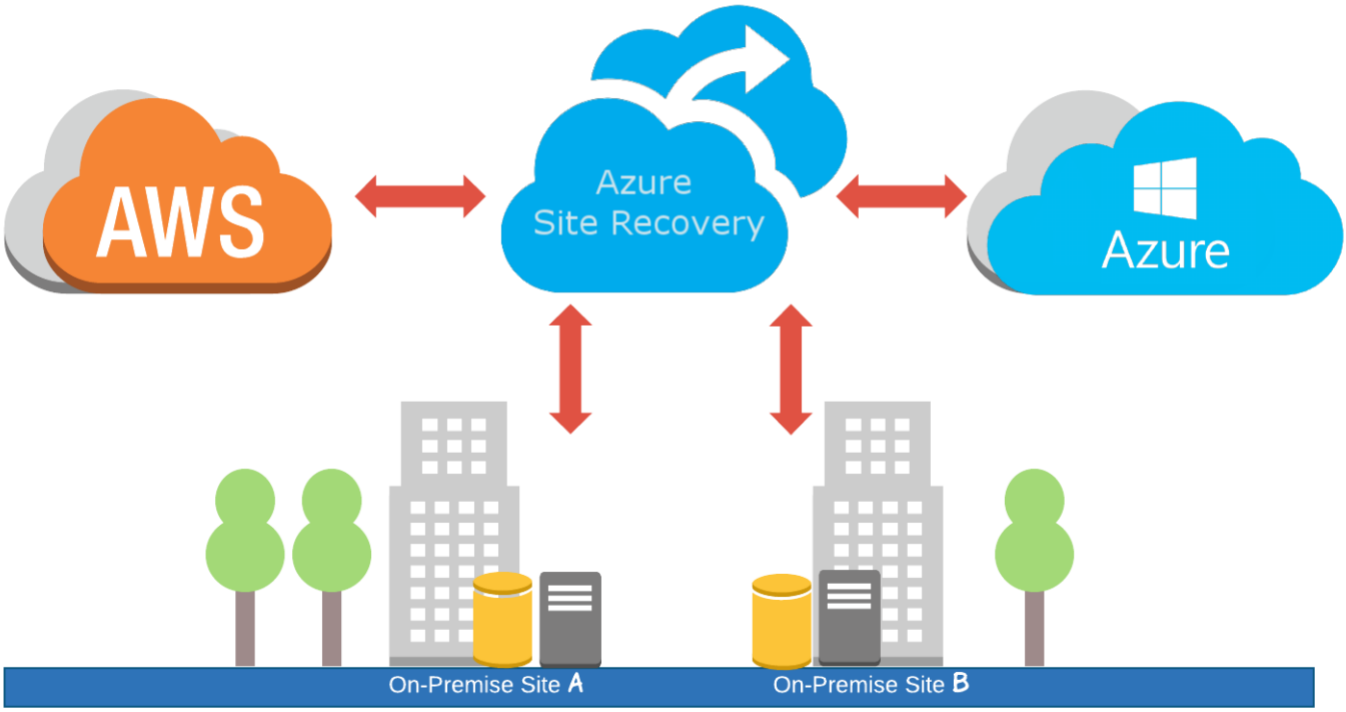
Azure is also open source, allowing you to use your own operating system (not just Windows), your own programming language and the tools of your choice. Azure is the only cloud solution that has integrated Red Hat support and the one with the most GitHub contributions in the whole of 2007.

Azure offers full integration with Active Directory and Office 365 to provide a fully consistent experience across your cloud and on-site technologies, as well as integrating your own knowledge.

Using your own Windows Server licenses, Software Assurance can save you a massive 80% compared to the PAYG plans on offer when you combine Azure Reserved VM Instances with Azure Hybrid Benefit and you can also easily move your Windows Server 2008, 2008 R2 and SQL Server workloads right over to Azure with no fuss, little effort and no changes to application code.

With all the other benefits on offer, no other cloud service offers anywhere near the functionality and features that you get with Microsoft Azure; no other offers an open source cloud experience, a consistent hybrid cloud and such competitive pricing, ensuring that Microsoft has the cloud service for business of all types and sizes.

Microsoft Azure vs AWS



Microsoft Azure is the most recognized cloud platform in the world, even more so than Amazon Web Services (AWS) and is the most trusted cloud service for both hybrid and enterprise infrastructures. But how does Azure really compare to AWS?

Put the two cloud services side by side and you will see some very obvious differences. Microsoft Azure beats AWS hands down with one of the most comprehensive compliance offerings anywhere, more global regions, better intelligence and a truly consistent hybrid cloud.

Privacy Regulation

Microsoft has a long-standing reputation in data protection, privacy and compliance with the most complex of regulations. Right now they are actively complying with the EU Model Clauses and the EU-US Privacy Shield. The new GDPR (General Data Protection Regulation) is, in Microsoft's eyes, one of the most important factors in clarification and enablement of privacy for individuals. They are fully committed to complying with GDPR, one of the very first organizations to do so, across all cloud services.

Consistent Hybrid Cloud

Microsoft offers the only hybrid cloud that allows users to build their solutions and deploy them consistently across their technology stack. They provide users with a consistent user experience, and a fully optimized and secure hybrid infrastructure, something that no other cloud service in the world offers.

Unmatched Intelligence

Microsoft Azure offers intelligence capabilities built right into the cloud to assist with the development of breakthrough apps. AI models can be built and deployed at scale and Azure offers plenty of AI services to help you grow your capabilities, deploying intelligence with ease.

Globally Active

With more than 4 regions and 140 countries covered, Microsoft Azure offers true global scale, enabling deployment around the world almost instantly. No other cloud provider, including AWS offers this much global reach.

Smarter Retail

Finally, more and more retailers are moving away from AWS to Azure. With Amazon extending into so many different sectors they are running the risk of being in direct competition with their own AWS services. With Azure, you get access to leading and innovative services that support your industry, not compete with it, enabling you to achieve far more at a far lower cost.

And with more than 90% of Fortune 500 companies now using Microsoft Azure over AWS, well that speaks for itself.

The Intelligent Cloud

What is the Intelligent Cloud and The Intelligent Edge?

The intelligent cloud is universal computing that Azure enables through a combination of artificial intelligence and the public cloud. It is designed for all types of intelligent system and application that you could possibly imagine.

The intelligent edge is a set of devices and systems, all connected and ever-growing, that collects in data and analyzes it close to where it captures the data from. Users can benefit from real-time experiences and insights, all delivered by apps that are contextually aware and very responsive.

On their own, each offers users vast benefits. Together, they provide the ability for users to create applications that are connected and distributed and, as the ultimate solution, breakthrough outcomes for every business.

Consistency Across The Cloud and The Edge

With the cloud and the edge combines, users can imagine brand new distributed applications and they can build them on a platform that is comprehensive and consistent across the board.

- **Application Development Platform**

Provides total consistency with all programming app services, models, data services and with DevOps to ensure users have the simplest solution possible for development and for deployment. Users can make use of Azure Functions to build an event-based system that will run on Azure IoT Edge, Azure and Azure Stack.

- **Security**

Makes security management across distributed infrastructures much easier and far less complex. With the Azure Security Center, users can take advantage of a unified approach across all environments along with threat protection for all workloads on a solution that runs from Cloud to Edge.

- **Identity**

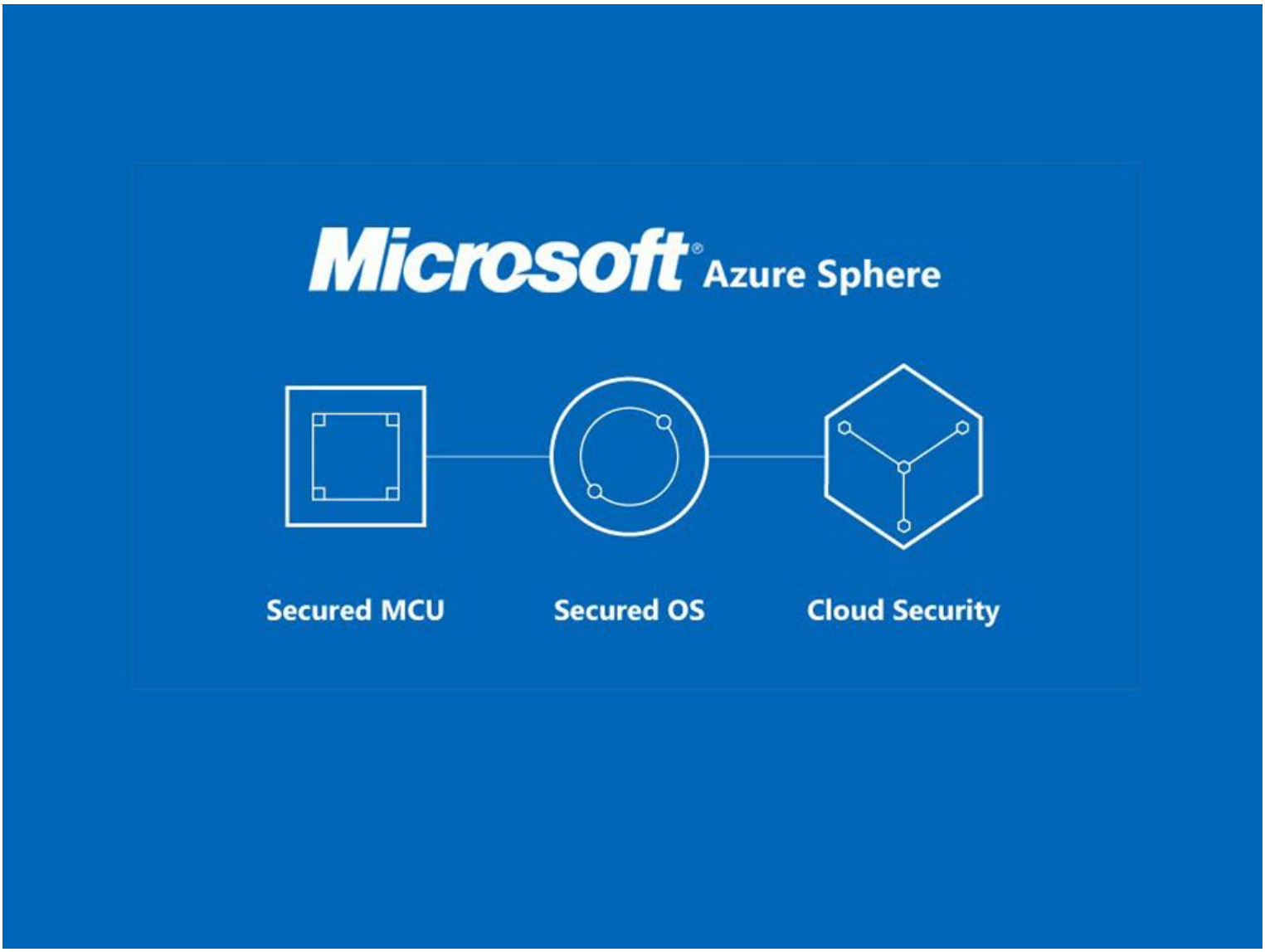
Identity management made simple with Azure Active Directory on all cloud to edge solutions. AAD assists users in controlling access to apps, data and devices, including control lists for access, conditional access, access reviews, just-in-time access and identity protection.

- **Management**

Intelligent management tools for disaster recovery, backups, monitoring and updates, built-in to simply cloud resource management in Azure and in your edge environment.

- **Artificial Intelligence**

Finally, the ability to build Azure machine learning models that can deliver real-time insights at the edge. Existing machine learning models can be retrained and improved through the simple transfer of data sets into Azure



What is Azure Sphere?

Azure Sphere is Microsoft's solution for helping users create connected, highly secure Microcontroller devices (MCU). Sphere provides users with complete confidence and total power in recreating the future of their business.

If there is one major concern where connected IoT experiences are concerned, it is security. Rather than trusting your brand to the second-best, to just one line of defense, Sphere offers a total solution. Microsoft can offer years of research and experience and all of that has gone into Azure Sphere to promote total security with their own secure operating system, crossover MCUs and a turnkey security service for the cloud. Every

Azure Sphere device is fully protected and Sphere also offers end-to-end IoT security, all highly responsive to threat so you can concentrate on other aspects of your business.

Get to Market Quicker

With Azure Sphere, you can streamline product development and maintenance. Fully designed with efficiency in mind, Sphere offers a full range of Visual Studio tools that will change the way you create your MCU-powered experiences and how you manage them. Sphere is also designed for quick connection with Azure but, because it is open source, Sphere can be used beside whichever private or public cloud you choose.

Recreate the Future

No longer can we consider IoT to be something out of a Sci-Fi movie. It is here and it is now and Azure Sphere promises a fully connected future for all MCU devices, no matter where they are. With Sphere MCUs, you get connectivity built-in and computing power unmatched by any other. With the ability to reimagine your entire business, Sphere allows you to recreate your future, bringing more intelligent products right to your customers.

With Azure Sphere, you get the very best of the expertise that Microsoft offers in software, cloud and device technology, all combined in a unique and empowering security approach. Sphere MCUs, combines with the Sphere Security Service and Sphere OS provide businesses with an intelligent future to look forward to.

- **MCU**

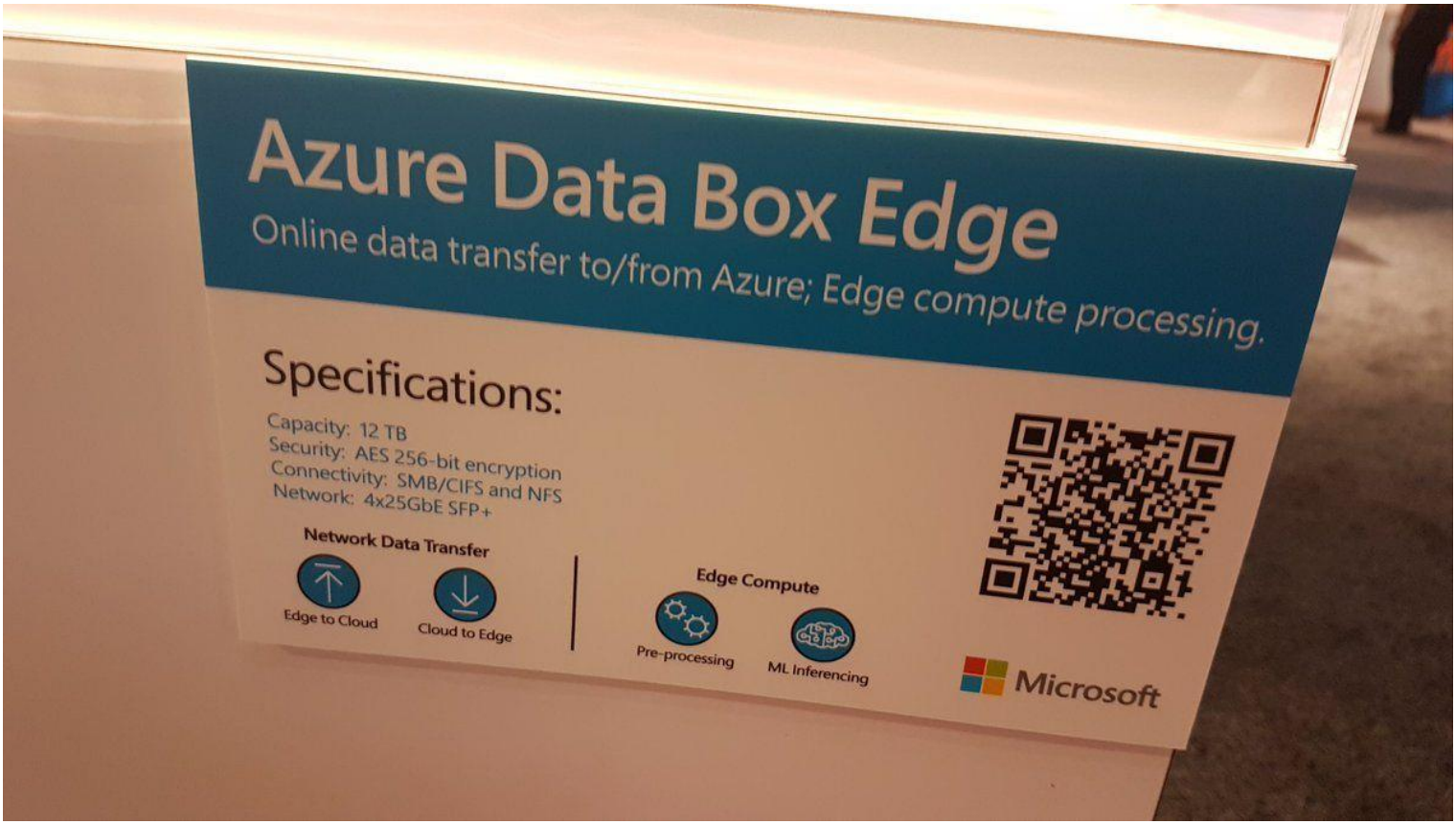
Fully secured from silicon upwards, crossover MCUs combine application and real-time processors with Microsoft's security technology and connectivity built-in.

- **OS**

An OS built specifically for agility and security, providing IoT experiences with a fully trusted platform.

- **Cloud Security**

A cloud purpose-built for IoT security to protect all your devices. With Sphere Security Service, device security is complete, emerging threats are identified quickly and trust between the cloud, device and any other endpoint is fully brokered.



What is Azure's Data Box Edge?

Together with Data Box Gateway and a variety of Data Box transfer products (online, Data Box Edge provides a secure link between Azure storage and your site. Moving data in and out of Azure has never been easier; easier than working with local network shares! Together, they offer the highest performance in transfer capabilities, removing all the hassle of transporting data across the network. Not only that, but Data Box Edge is also an Edge computing appliance fully enabled with Artificial Intelligence.

Preview

Data Box Edge

- A fully AI-enabled device
- Data Box Edge is a physical device only available from Microsoft
- It is a storage gateway
- It fully supports NFS or SMB protocols
- It has support for Azure Files or Azure Blobs
- It has a 1U chassis, 6GB RAM and 2 x 10-core CPUs
- It has 12TB local NVMe SSD storage

- It has 4 x 2 GbE network interfaces
- Prices start at just $11.22 per month

Data Box Gateway

- Provisioned within your hypervisor, Data Box Gateway is a virtual device
- It is a storage gateway
- It has support for NFS or SMB protocols
- It has support for Azure Blobs or Files
- It has support for VMWare or Hyper-V
- Subscription starts at $2.50 per month

Data Box Edge Use Cases

- Analysis of on-premises system data or IoT device data to get quick results from close to where that data is generated. Edge data sets can be transferred easily to the cloud for deeper processing and analytics and pre-processing can be used for modifying or aggregating data, transferring big data and analyzing IoT events.
- Enables machine learning models to be run at the edge for fast results without having to go on a trip to the cloud. The entire data set can be transferred to Azure and retrained and improved.
- Quickly and easily transfer data for archiving or for deeper analytics.

What is Azure IoT Edge?

The IoT, Internet of Things, is a merger between the cloud, artificial intelligence and edge computing. Azure IoT Edge allows you to stack up your cloud workloads, like Machine Learning, Azure Cognitive Services, Functions, and Stream Analytics, running them all locally on any device, from a small Pi to the largest of industrial gateways. With Azure IoT Edge, you can use the Azure IoT Hub to manage your edge devices and applications, scaled to support whatever cloud or private environment solution you use.

- Together with Qualcomm, Azure IoT Edge allows you to develop IoT camera-based solutions quickly and easily, combining edge computing and on-device vision AI.
- IoT Edge optimizes performance between the cloud and edge, ensuring the lowest possible latency, while keeping up with security, management and scale.
- Intelligent edge devices face much higher threats to security, from physical damage to having the IP hacked. With IoT Edge, security goes much deeper, extending to all kinds of risk profiles and scenarios for deployment.
- With IoT Edge, deployment of machine learning, complex event processing, image recognition and more without having to write it all in-house. Azure

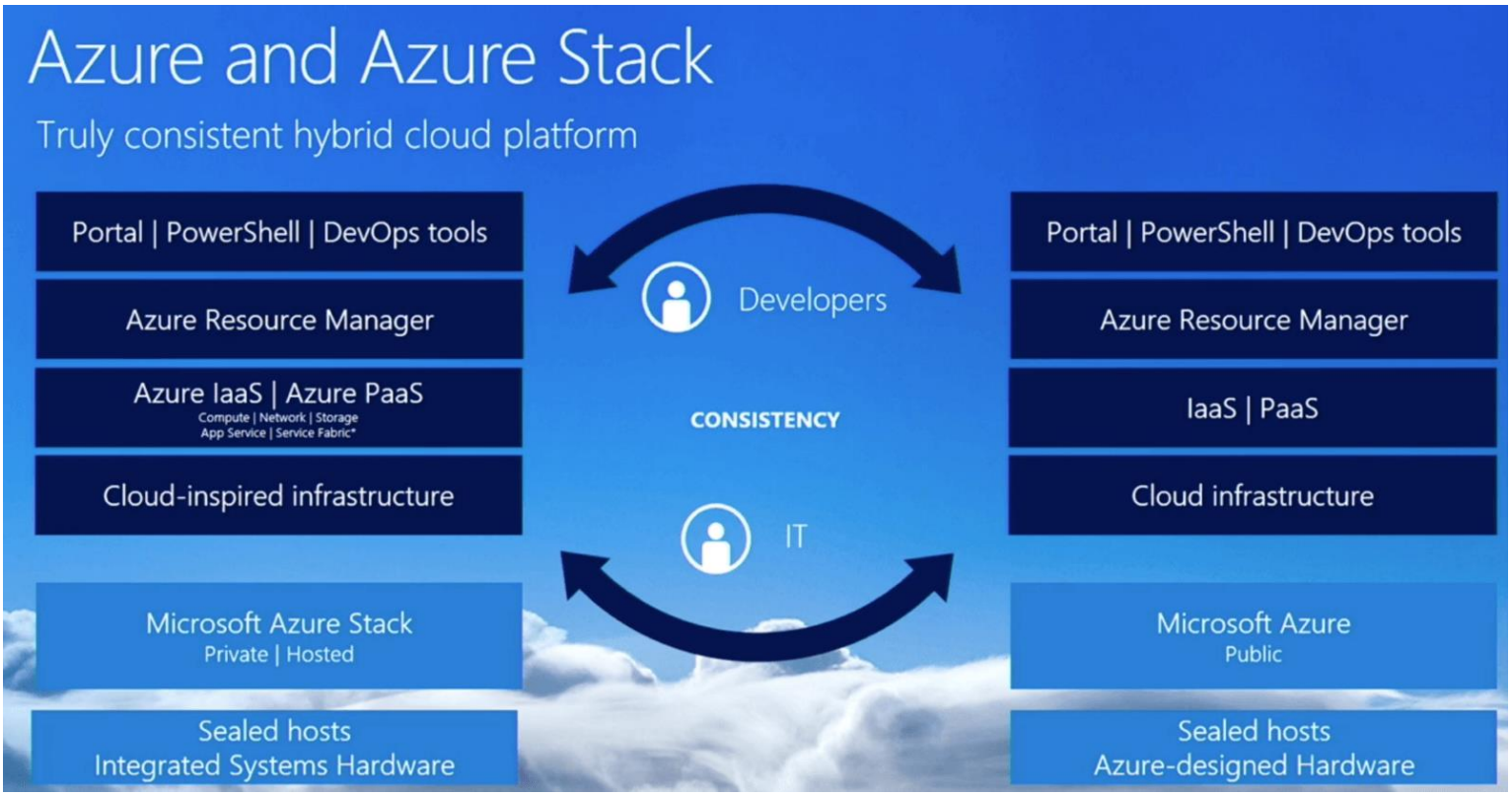
services like Stream Analytics, Functions, and Machine Learning can easily be run on-site and AI module easily created with the AI Toolkit for Azure IoT Edge.

- With services like trained models or Azure Steam Analytics, data can be locally processed with only what's needed being sent to the cloud for analysis. This lowers the cost of sending data to the cloud while maintaining the high data quality.
- IoT Edge shares the programming model that other Azure IoT services do which means one code can be run on-device or in the cloud. IoT Edge provides support for multiple operating systems, and multiple programming languages, enabling users to stick with what they know best and retain their business logic without having to start over.

IoT Edge can be used for multiple services, including:

- Building and deploying AI models
- Customization of computer vision models
- Processing streaming data in real-time
- Using serverless code for processing events
- Deploying SQL Server databases to the edge
- Building custom logic

Fully compliant with Industry 4.0 interoperability standards, Microsoft is continually adding services to Azure IoT Edge.



What is Azure Stack?

Azure Stack is Microsoft's answer to a hybrid computing solution, designed to make it easy for businesses to deliver their chosen Azure services right from within their own data centers. Stack combines IaaS and PaaS in one stack that runs from on-site data centers to the Azure cloud, sharing a standard architecture.

Azure Stack was created to ensure that businesses can use a hybrid cloud solution but on their terms, using the power the cloud offers while maintaining a hands-on approach to considerations such as latency, customizations, data sovereignty and regulations. With Azure Stack, you can:

- Build hybrid cloud applications, deploy them and operate them consistently across Azure and Stack.
- Process data in Azure stack and aggregate within Azure to address connectivity requirements and latency, while sharing application logic common across both platforms. This gives you the absolute best solution for edge and cloud computing, unlocking business value that was never possible before.

Integrated Systems

These are offered by way of a partnership between Microsoft and their hardware partners, providing a solution that combines cloud innovation with the simplicity of computing management. Azure Stack is an integrated system of software and hardware, providing users with complete control and flexibility, as well as being able to take advantage of cloud innovation.

Integrated systems range from 4 to 16 nodes and joint support is provided by both Microsoft and the hardware partner.

Regulatory Requirements

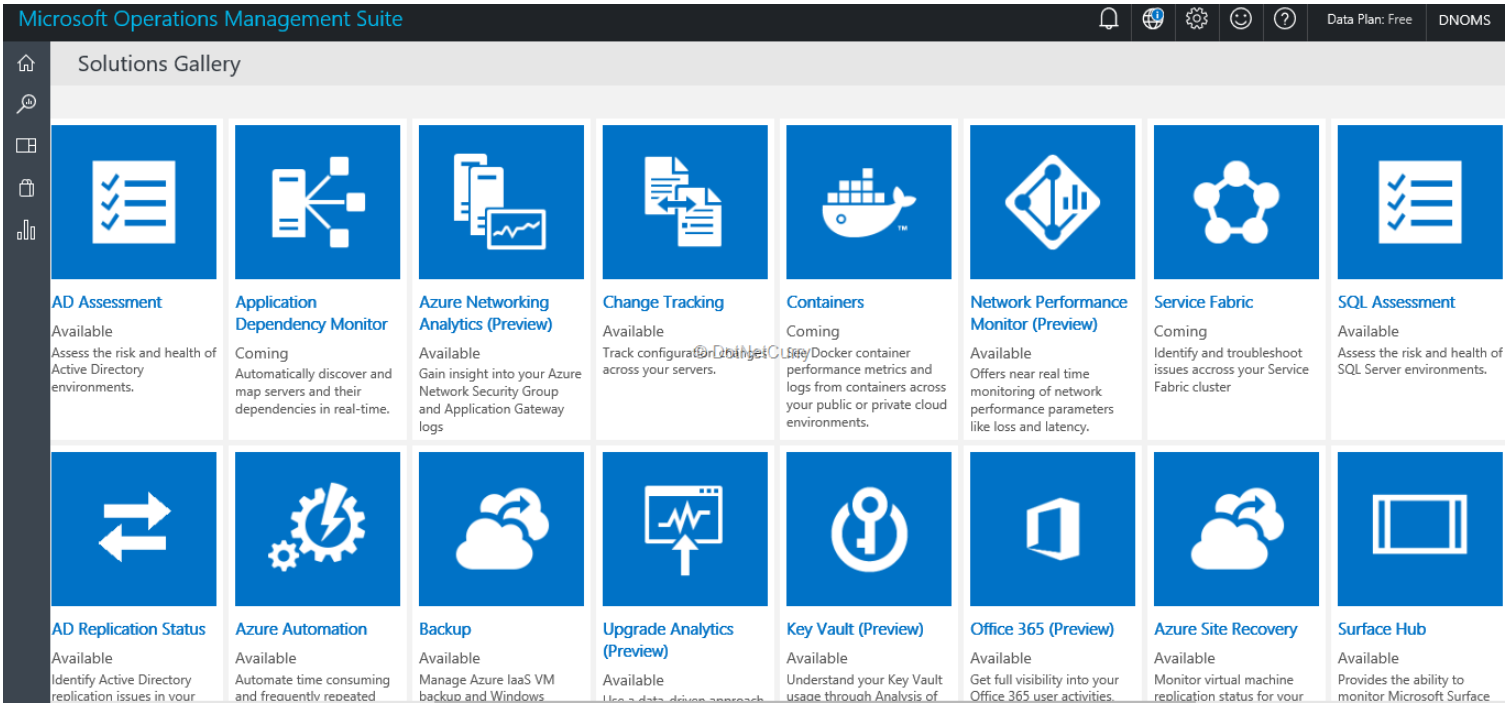
In the context of global deployment, businesses sometimes need to host multiple instances of one application to Azure or Azure Stack, dependent on your technical and business requirements. Applications can be developed and deployed in Azure with the flexibility for on-site deployment using Stack to meet policy or regulatory requirements without the need to change a single piece of code.

On-Premises Application Models

Azure web services, serverless computing, microservices architecture and containers can be applied to keep legacy applications updated or to extend them, while maintaining a DevOps process consistently across the cloud and on-site deployments.

Azure Stack, together with Azure, provides business users with a consistent hybrid cloud environment that is dynamic, shifting to meet your ever-changing needs.

Azure Solutions



Internet of Things (IoT)

Microsoft is intending to invest around $5 billion over the next few years into the Internet of Things with the goal of providing all customers with the power and the tools to transform their business using connected solutions. Their idea is simple – gain insights from all your connected devices and then turn them into action using powerful applications on Azure, the leading IoT development platform in the world.

Why Azure for IoT?

Because Azure provides you with the tools you need to reduce the complexity of your tasks, bring your costs down significantly and hasten the time to market. Azure offers a whole host of IoT solution accelerators and services designed around multiple industries and scenarios, including predictive maintenance, remote monitoring, connected products and smart spaces.

The Azure Internet of Things is a series of cloud services, Microsoft-managed that connect billions of assets together, monitoring them and controlling them. Simply put, IoT solutions are a series of IoT devices combined with at least one back-end service, in the cloud and communicating with one another.

IoT Industry Solutions

Together with their partners, Microsoft delivers IoT solutions specific to each industry, all backed up with years of experience. It doesn't matter whether you want to change the way your products are made, save on energy or build an entire smart city, Azure IoT has the services and solutions needed to do whatever you want.

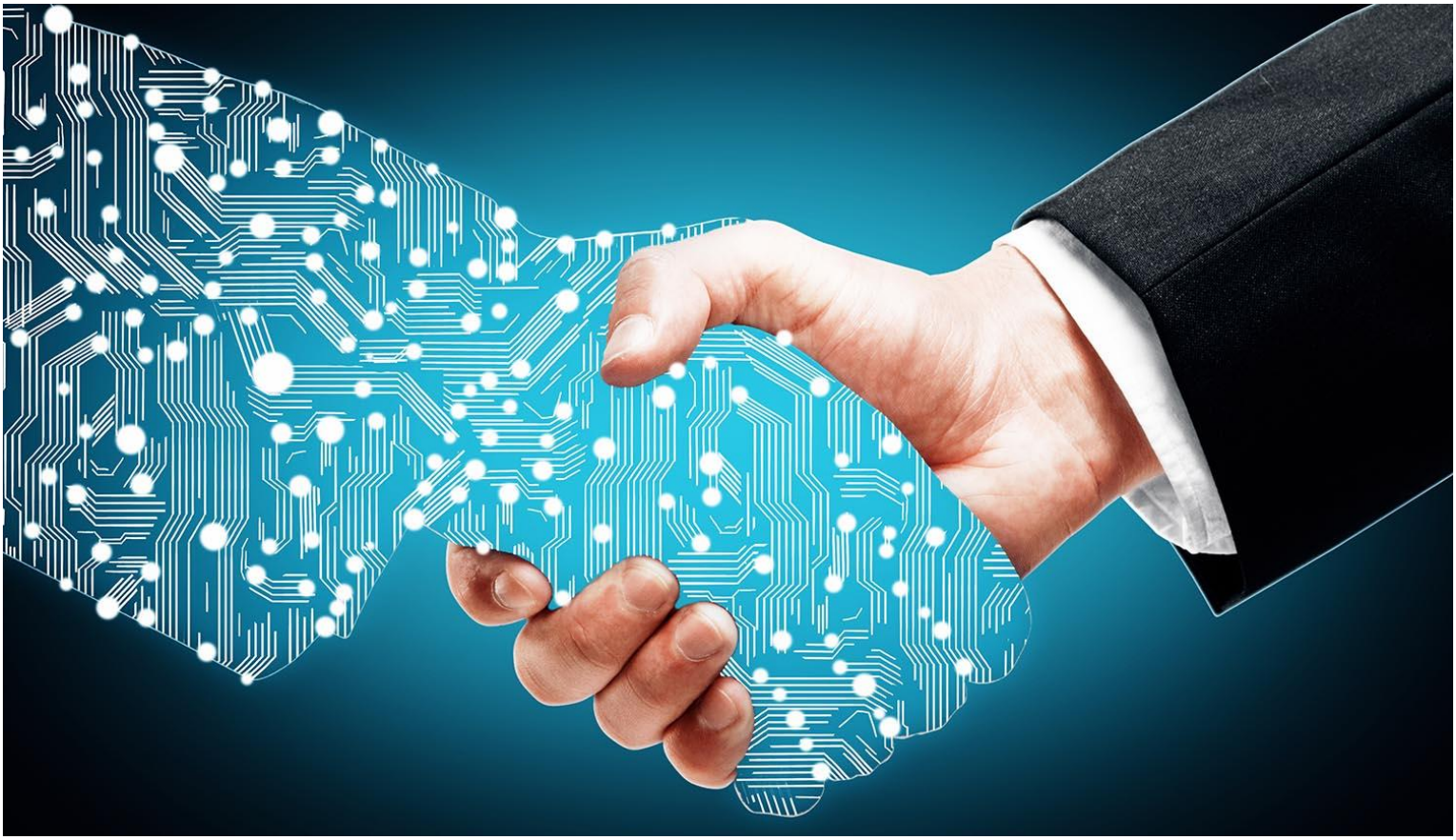
Azure IoT offers plenty of development options, its open nature allowing customers to use their preferred language and the SDKs they already have to quickly develop, to get their devices connected, gain those insights and achieve driven results.

Who Uses Azure IoT?

Thousands of customers are already using Azure IoT to drive their business results:

- Rolls-Royce
- The State of Alaska
- Johnson Controls
- Kohler
- Sandvik Coromant
- JABIL
- Schneider Electric
- Roche Diagnostics

And many more, a testament to the success that Azure IoT can help every business recognize.



Artificial Intelligence (AI)

With such a flexible platform and a huge range of AI productivity tools, Azure offers all businesses the opportunity and the ability to build next-gen smart applications where data can live on-site, on the intelligent edge and in the intelligent cloud. Trusted AI services on offer include ready-made APIs like Conversational AI with Bot Tools and Cognitive Services, along with Azure Machine Learning to help build custom models. And the platform also has a top-class AI infrastructure and modern AI tools to assist with AI solutions.

Why Azure for AI?

Azure offers the perfect platform for AI including:

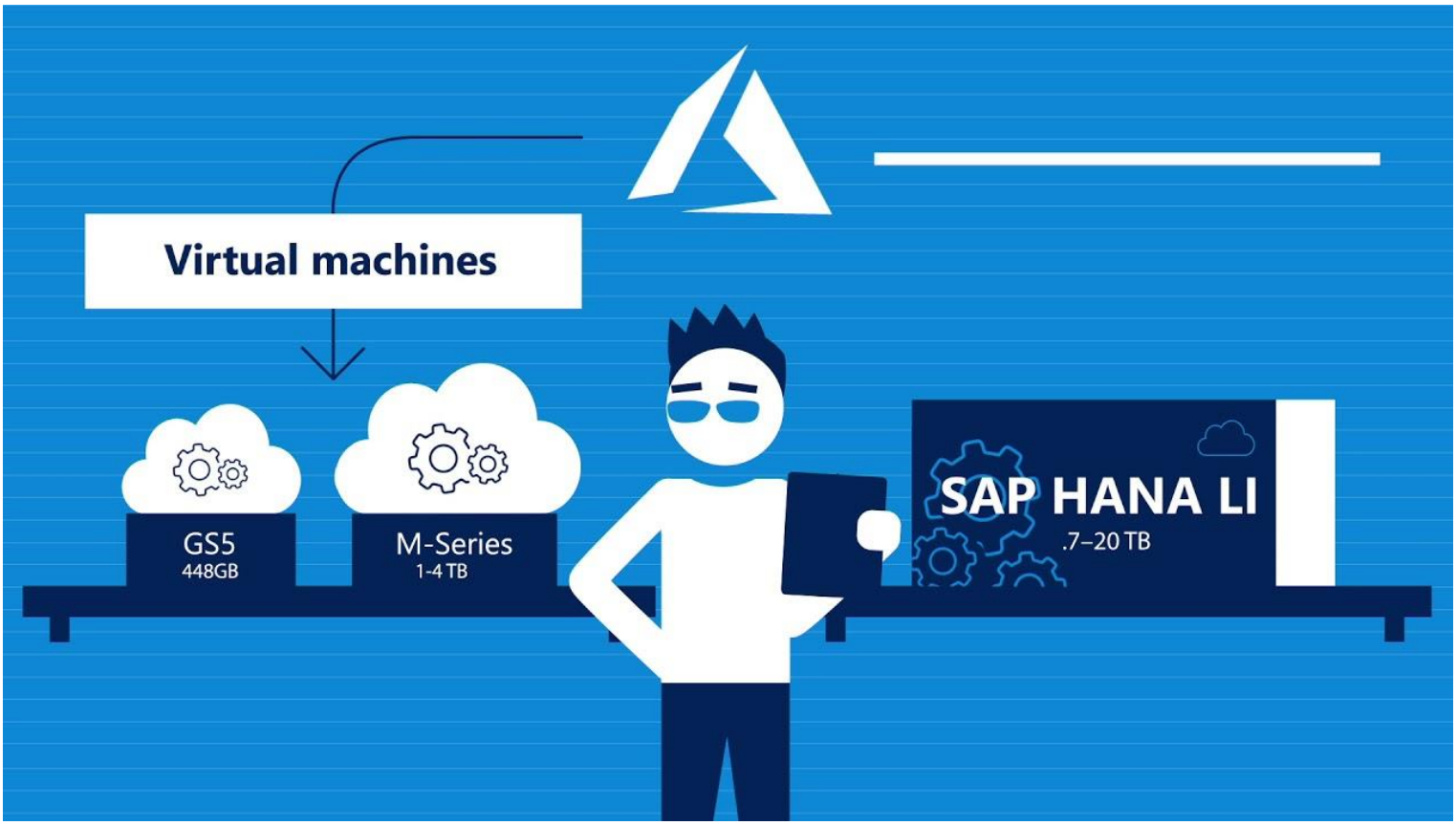
- **Productive AI Tools** – from ready-made APIs to Customizable ML, with Deep Learning services and tools, all readily available to all
- **AI to You** – Azure provides AI and Data so customers can build their intelligent applications right where their data lives using skills they already have.
- **Open and Flexible** – Choose the Deep Learning framework and the technology that suits the skills and scenario with one of the most open platforms in the world.

Write applications in any language and build custom models using frameworks such as CNTK, TensorFlow, Chainer and MXNet.

- **Years of Investment** – From Research to Office, Bing, Xbox, Windows and plenty of other products driven by AI, Microsoft offers years of investment, knowledge and experience.
- **Enterprise-Grade AI** – Microsoft is an industry leader in security and privacy as well as meeting industry and international compliance standards to ensure compliance and adherence to the controls mandated by the standards.

Customers Using AI on Azure:

- Uber
- Schneider Electric
- GreyMeta
- Dixons Carphone
- American Eagle Outfitters
- BT
- NBA
- And many more



SAP on Azure

The collaboration between SAP and Microsoft in 2017 expanded a 20+ year-long alliance by bringing SAP S4/HANA systems to Azure with the result being an ecosystem that provides useful insights and product integration to help make running SAP applications and solutions in the cloud so much easier.

Why Azure for SAP?

Together, Azure and SAP provide users with performance unrivaled by any other collaboration. SAP applications can run in a cloud environment that is reliable, secure and robust. A cloud environment that covers the most global regions, with a compliance portfolio larger than any other, security embedded right in, industry-leading support and enterprise-grade SLAs. With Azure you get support for the biggest SAP HANA workloads out of all hyperscale cloud providers.

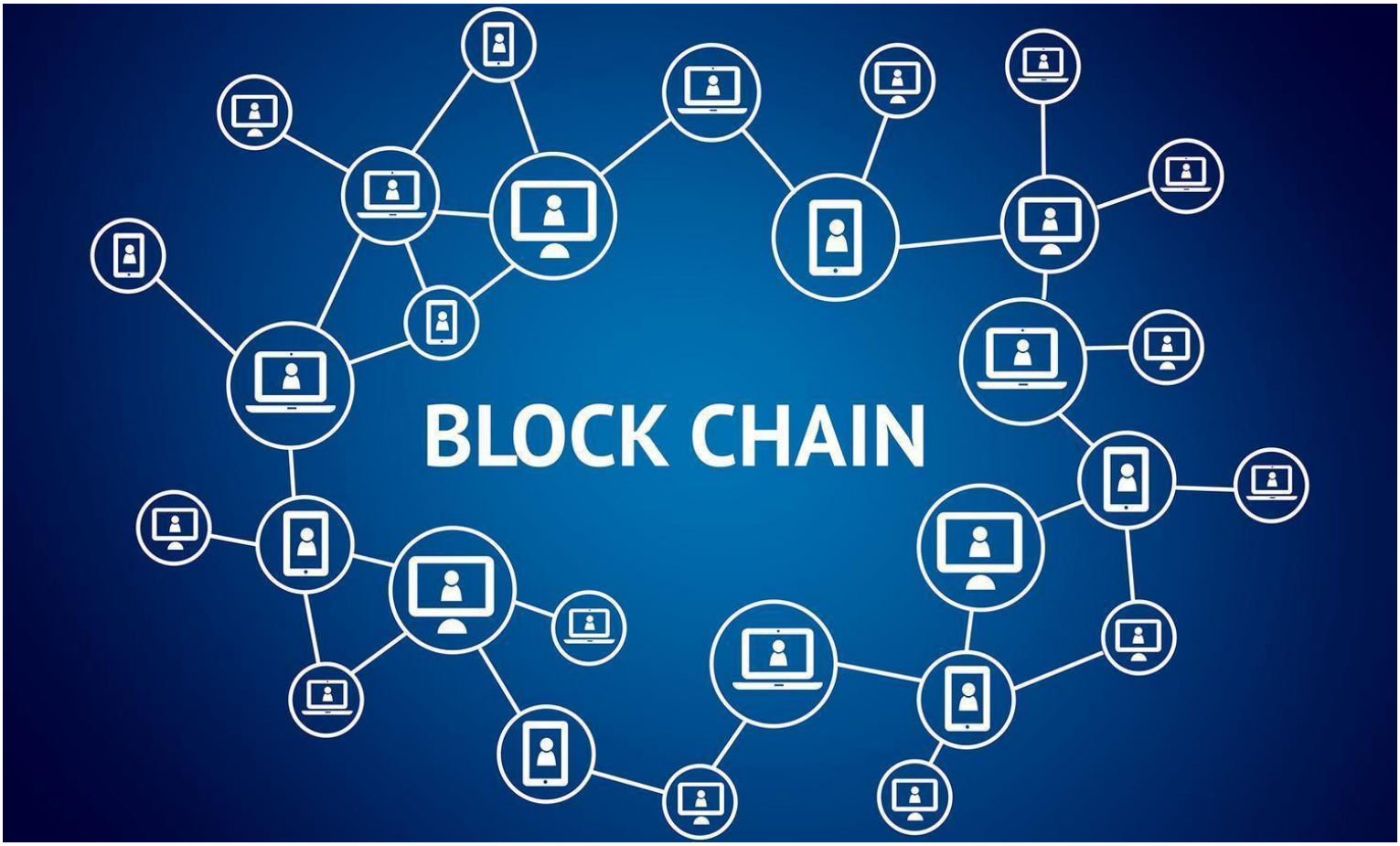
- More than 20 years of partnership and experience
- Covering 54 regions
- Flexible scaling, 99.99% SLA

With Azure and Sap together, you can:

- **Meet all your security and compliance needs.** Comprehensive compliance offerings help you protect all your data. Microsoft commits themselves to provide high levels of trust, certifications, transparency and full compliance with regulations. Use products like Azure Security Center, Azure Active Directory and Azure applications for application management and monitoring to address all your privacy and security requirements.
- **Increase performance and scale** using high-performance infrastructure certified for SAP HANA applications. SAP applications can be run on any database, including SQL Server, SAP HANA, Oracle Database, SAP ASE and IBM Db2 on any operating system, including Windows, Red Hat Enterprise, SUSE Linux and Oracle Linux.

Other features include:

- Use on-demand SAP-certified Azure virtual machines
- Full support for already-owned SAP licenses
- 40-75% savings on dev-test workloads when you use DevTest Labs and other Azure automation solutions
- Built-in backup and disaster recovery service



Blockchain

The blockchain is one of the most transparent systems ever, not to mention totally verifiable, and it will change how people the world over exchange assets and values, build contracts and enforce them and how data is shared. Blockchain technology is a secure, distributed ledger of transactions that is decentralized and now businesses are beginning to harness the power of the blockchain to enable a brand-new class of next-generation applications. Now, with the blockchain on Microsoft Azure, business users can share processes and data, eliminating waste, cutting down of fraud risks and creating new streams of revenue.

How Are Businesses Using Blockchain?

- **Financial Services Industry –** blockchain is applied across capital markets, banking and insurance industries to help eliminate the middle-man, enable more efficient collaboration and create brand-new disruptive business models.

- **Supply Chains –** blockchain can help quickly resolve disputes, and can add visibility and transparency to the supply chain enabling a consistent real-time view.

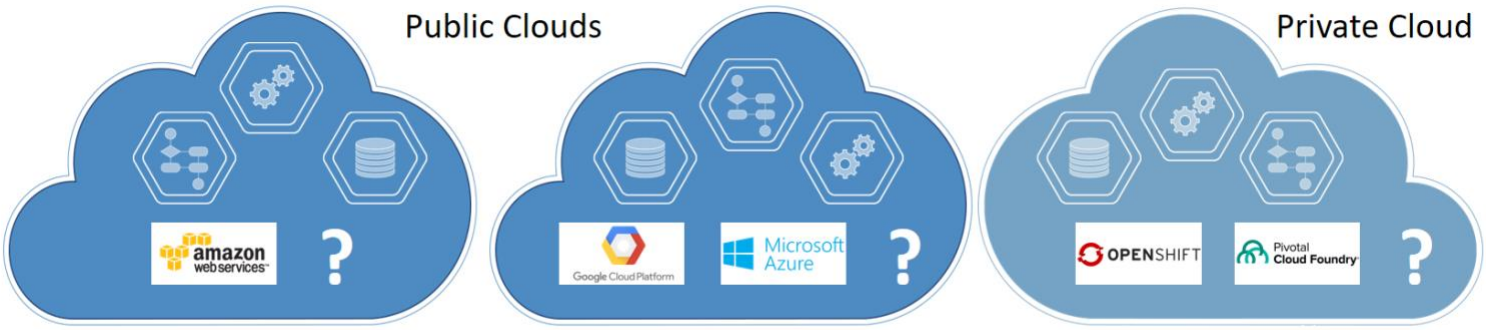
Why Use Blockchain on Azure?

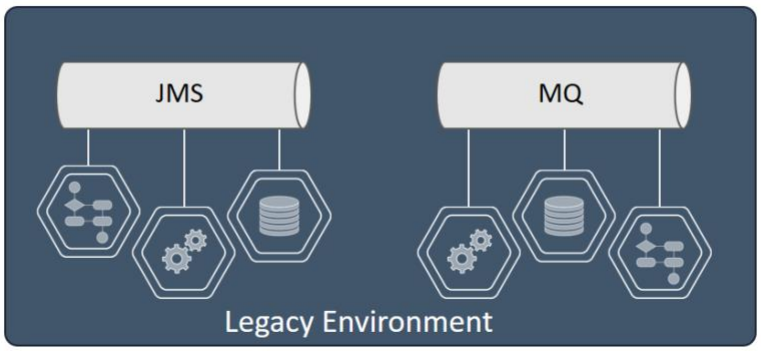
- **To simplify development** by cutting development time and using modular networks and infrastructures that are preconfigured.
- **Up and running at speed -** blockchain scenarios can be iterated and validated very quickly with connections to Azure built-in, along with tools you already know how to use.
- **Confident Innovation –** scale as you need to and keep everything secure with a cloud platform that is open, global and trusted.

Example Scenario

Perhaps the most common of the blockchain patterns is asset monitoring enabled by IoT. The asset is monitored as it traverses a supply chain with multiple parties and a good example would be the refrigerated transportation of goods that are perishable because, throughout the entire transportation process, they must meet specific compliance rules.

The initiator, perhaps the retailer, will specify the conditions of the contract – temperature range, humidity, etc. – that must be strictly adhered to along the supply chain. The contract is a smart contract that, should the device take a reading that does not comply with the contract, it will update to indicate that compliance is not being met; a transaction gets recorded on the blockchain and remediating events, also entered into the contract, is automatically triggered. Everything is visible and the entire transaction, from start to finish, is transparent and verifiable.





Hybrid Cloud Applications

Together, Azure and Azure Stack can provide a business with the speed and agility of cloud computing in their own on-site environment. Using the hybrid cloud environment, modern applications can be built with more control and more flexibility using a consistent set of skills, tools, processes and services.

- **More Efficient –** with a consistent set of DevOps tools and processes and Azure services, together with your own skills to take advantage of consistent development and deployment of applications.
- **Continuous Innovation –** make use of the updates to existing services and new Azure services, not to mention the Azure Marketplace applications to take advantage of the continuous innovation provided by Azure.
- **Deploy Your Own Way –** deploy applications to where you need them – on-site, in the cloud or to both. Base your decisions on your business, regulatory and technical regulations rather than limitations or complications.

Azure Services On-Site

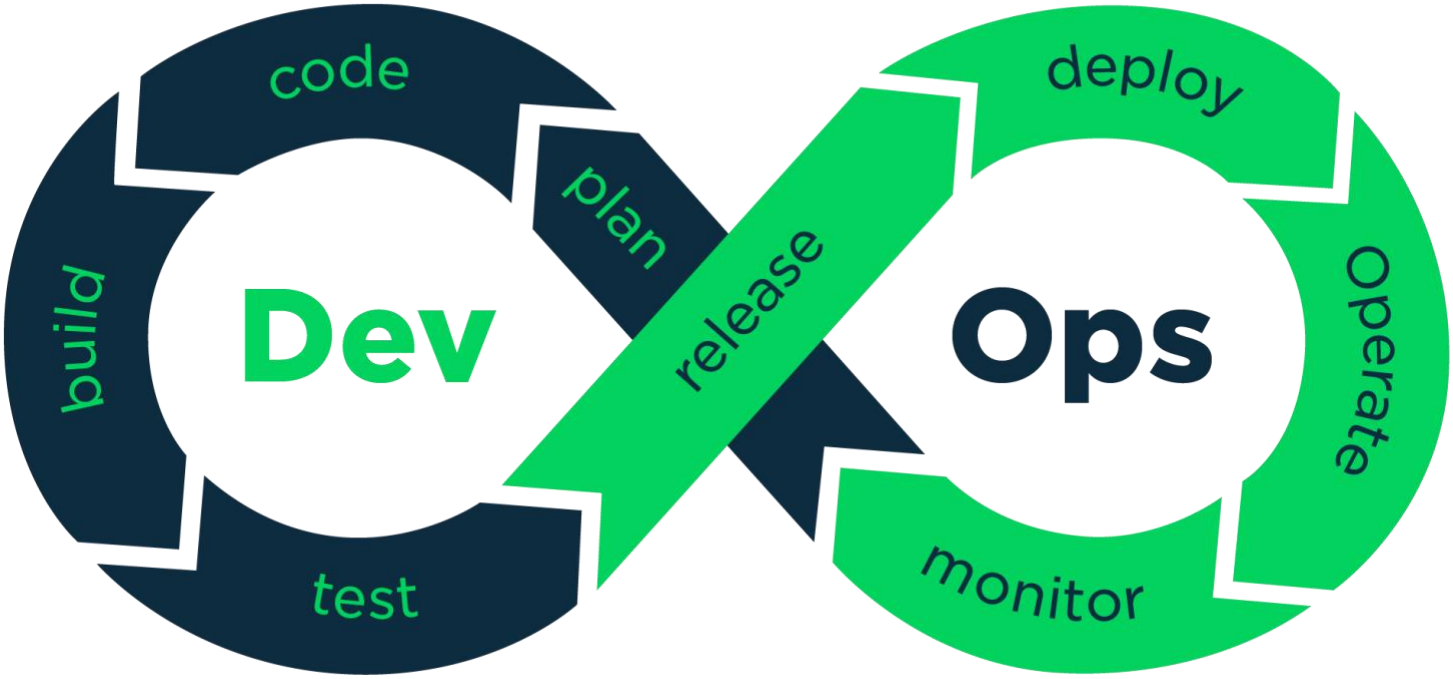
With Azure Stack, businesses can adopt the hybrid cloud environment that they want on their terms. With IaaS capabilities provided by Azure, organizations can go way beyond traditional virtualization and can develop and build the most innovative of applications. With consistent PaaS capabilities, development is made simpler and hybrid development portability and choice are fully enabled. Bringing IaaS and PaaS services together using management tools that Azure users, including Active Directory, to administer and manage Azure Stack Identities.

Faster App Building

Hybrid app development can be made much faster, using components directly from the Azure Marketplace to develop and build apps quickly. Those components include a huge choice of open source technologies and tools that you may already be familiar with, ensuring that you can integrate your applications with current Azure services and those that will arrive in the future.

Hybrid Cloud Solutions

- **Hybrid Connectivity –** use Azure Stack to deploy Azure Services on site or in the cloud, using consistent application logic, operations methodology and development paradigms.
- **Hybrid Identity –** even if your business requires that application components are kept on-site, this doesn't have to be a block to the adoption of cloud technology. Azure Stack allows app components to stay on-site while still interaction with Azure public cloud components. This enables intelligent identity management for both users and applications consistently across the cloud.



DevOps

Developmental operations, or DevOps for short, brings processes, people and technology together, providing automated delivery of software so that you bring the best value on a continuous basis to your users. With Azure, you can deliver your software more reliably and much faster, regardless of the size of your IT department and what tools you already use.

Why Azure for DevOps?

Azure DevOps helps you to simply and speed up your cloud development, improving it with:

- **CI – Continuous Integration**

Continuous integration helps you to improve the quality and speed of your software. Build your apps in the cloud with Azure DevOps and deploy them Azure knowing that, whenever code is committed, it will be built and tested automatically, thus detecting any bugs much faster.

- **CD – Continuous Delivery**

Your code and your infrastructure will always be in a production-deployable state with continuous delivery. Combine infrastructure as code (IaC) with continuous integrations and your deployments will be identical; you will also be confident that, should it be needed, you can deploy manually to production whenever you want.

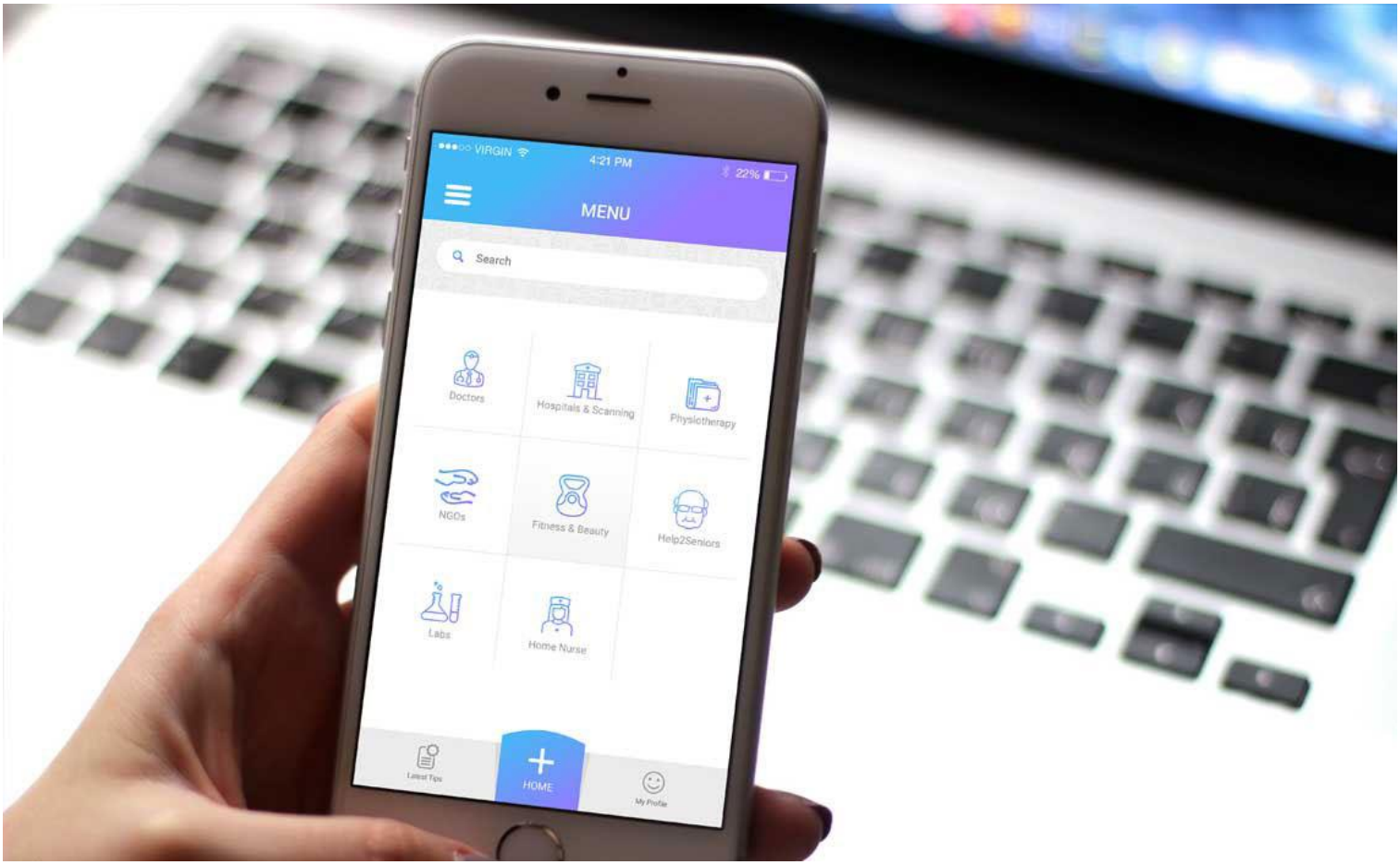
- **CI/CD With Continuous Deployment**

Your entire process can be automated, from committing the code to production when you take advantage of continuous deployment, so long as your CI/CD testing is a success. With CI/CD practices, you can deliver the features your customers want safely and on time.

With Azure DevOps on your side, you can also:

- **Increase your repeatability and reliability** by automating environment configuration and provisioning with IaC. You can capture definitions from the environment – declarative code like YAML or JSON – and then provision an environment that is identical using DevOps tools like Terraform, Ansible or Azure Resource Manager

- **Gain actionable insights** by monitoring the health of your infrastructure with Azure Monitor and Azure Log Analytics, integrating right into dashboards already in existence. With Application Insights, you can gain actionable insights by managing application performance and getting instant analytics.
- **Enhance your security and compliance** by using Azure DevOps tools like Azure Policy and Chef Automate. With these tools you can easily ensure compliance by managing your provisioned applications and infrastructure. Combine these tools with other services such as Azure Security Center and your exposure to threats will be limited and you will be able to find vulnerabilities and take remedial action.



Mobile

Developing for mobile has never been easier; using Mobile Backend as a Service (MBaaS), you can connect with customers and users regardless of where they are and you can create experiences tailored to your customer based on their behavior and interests. By using DevOps, tools and cloud services, your time to market will be significantly reduced.

Why Azure for DevOps?

With Azure DevOps, you can:

- **Build once, reach any platform.** Write your apps in one code and aim that at any platform, be it Windows, iOS or Android. Use the current skills your team possesses to expand your audience significantly and reuse existing code from other developmental projects to save time.
- **High-quality apps shipped faster.** The lifecycle of your mobile apps can be automated on any platform, be it iOS, Android, Windows, tvOS or Mac OS. Your

Git repository can be easily connected so you can build in the cloud, test your apps on real mobile devices, distribute your applications to beta testers and use analytics and crash data to monitor real-world use.

- **Use continuous learning to simply development.** End-to-end development can be streamlined through continuous integration and delivery, allowing you to create high-quality apps that your customers want. Apps can be tested on real devices, distributed to the beta testers, deployed to app stores and insights collected in real-time for continuous improvement.
- **Use proven mobile services to enrich apps.** We all know that no two apps are exactly the same but all have some building blocks in common. Your developers can focus their efforts on the logic while Azure DevOps takes care of the rest.

Related Microsoft Products and Azure Services

- **Mobile Apps –** build the backend for any mobile app and host it
- **Visual Studio App Center –** automate your application lifecycles and ship your apps much faster
- **Azure Cosmos DB –** a multi-model database, globally distributes, ideal for any scale

Related Solution Architectures

- **Task-based consumer mobile app –** this architecture makes use of Azure App Service Mobile Apps to help simplify user authentication with several identity providers, it stores data and it syncs it
- **Social mobile and web app authentication –** a mobile client app that offers a companion web app to help with social image sharing. It uses Azure Function to carry out backend image processing
- **Custom mobile workforce app –** mobile app architecture that makes use of Azure Directory to keep corporate data safe; data is delivered from an SAP backend to devices using Azure App Service API

E-commerce

Regardless of the product you sell, you will need scalable e-commerce solutions that are secure and that fully meet your business and customer demands. With Azure DevOps, you can engage customers through a series of customized offers and products, quickly process transactions securely and focus your efforts on fulfilling customer service requirements.

Why Azure for E-commerce?

Provide Customers With What They Want

You can't sell a product unless your customers want to buy it. Using the Azure e-commerce platform, you can easily analyze traffic and conversion rates to produce special offers and products based on what customers are looking at. You can create

shopping experiences that are personal, targeting specific customers with specific offers and content. The result is an increase in customer satisfaction from start to finish.

More Sales, More Often, More Secure

More customers equal more transactions and you need to be ready to handle every one of them smoothly and securely. With Azure, you can design the e-commerce experience that customers can navigate easily and deploy it to a compliant and secure e-commerce platform.

Meet Customer Demand

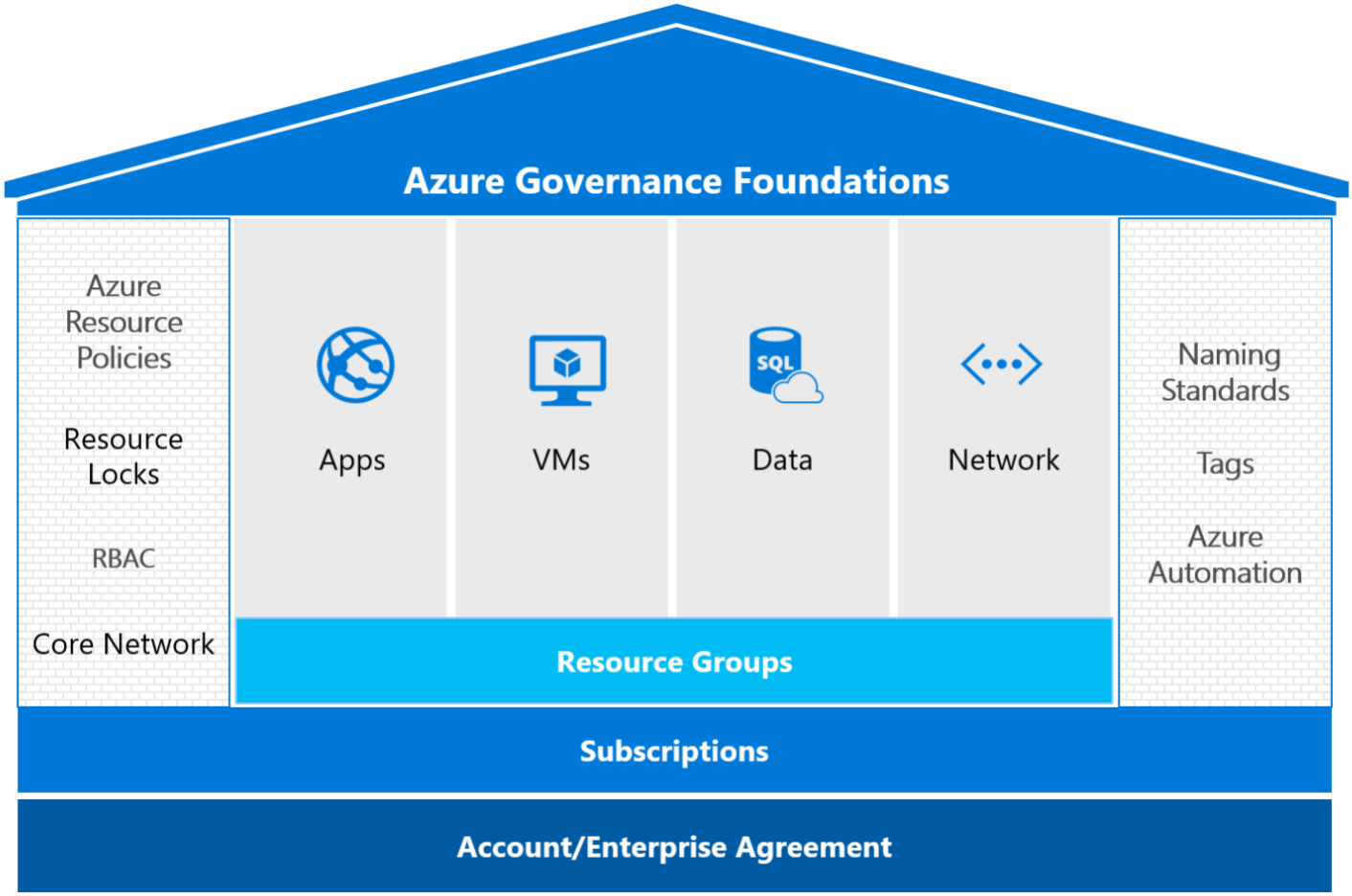
Your e-commerce solution must be able to meet the demands of your customers and must be able to adapt easily to seasonal demands. Be prepared to handle predictable and unpredictable demand, more customers and transactions easily and automatically. Plus, with cloud economics, you only pay for what you use in terms of capacity.

Every Point in the Supply Chain must be Optimized

Increasing your bottom line isn't just driven by sales. You can save by streamlining the supply chain, cutting down on support costs, and increasing both supplier and seller satisfaction by using a series on self-service portals. By using order information and historical data you can also improve the management of your inventory and cut your shipping costs.

Focus in the Right Direction

With e-commerce, your focus should be on sales not on managing your IT infrastructure. Use ready-built cloud services, you can create a solution that boosts sales performance and leaves the rest to your cloud provider.



Azure Governance

With Azure Governance you can make sure you are fully compliant with all internal policies and external regulations using the Governance capabilities built right into Azure. And developers will get complete flexibility and control to develop and deliver applications much faster.

Why Azure Governance?

- **Built-in Compliance**

Built into Azure are more 70 compliance certifications and plenty of built-in policies that ensure your business stays fully compliant with all regulations

- **Adaptive Policy Control**

You can choose whether to apply policies in specific areas of your business or across the environment as a whole and, as your business needs grow, you can scale to your requirements.

- **Better Experience for Developers**

Your developers can stay fully focused on their business goals, leaving tasks related to compliance to Azure, using the Azure Governance infrastructure management tools and self-service provisioning.

How Does Azure Governance Work?

Azure Governance offers enterprise users plenty of features and services to choose from, including:

- **Azure Policy –** Policy-based management implementation for every Azure service.
- **Azure Blueprints –** Easily create environments that are fully compliant with regulations and apply a choice of group policies to all new subscriptions to Azure.
- **Azure Management Groups -** Take advantage of flexible hierarchies to apply policies to several subscriptions at once.
- **Azure Resource Graph –** Get quick and easy visibility into all your enterprise resources.

Azure Governance for Multiple Scenarios

- **IoT –** Take advantage of Azure Governance for all data collected from IoT assets, devices and sensors using Azure IoT
- **DevOps –** Implement full Azure governance on all SAP workloads by using SAP with Azure
- **Blockchain –** Easily enable Azure governance for cloud security on all your distributed apps that are developed and deployed using Azure Blockchain.

Azure Confidential Computing

Azure confidential computing helps to protect both the integrity and the confidentiality of all your code and data while it is being processed in the cloud. Security is one of the biggest reasons why enterprise users are adopting cloud computing but, when you have highly sensitive data and IP scenarios to move over to the cloud, security is also a major concern.

We already have ways of protection data at rest and in transit but Azure goes one step further and protects it while it is being processed. Confidential computing provides new security capabilities using encryption mechanisms, or trusted execution environments (TEEs). These are software or hardware implementations that protect data while it is being processed so it can't be accessed externally to the TEE. Only code that has been authorized may access data or run so both code and data are fully protected from external viewing and modification.

Core Confidential Computing Components

- **Deployment and Management of TEE-Enabled Compute Instances**

Access hardware-based functionalities and features in the cloud for building and running applications powered by SGX. Make use of the DC-series virtual machines to build applications that will protect code and data in use.

- **Development Against Standard Enclaving Abstractions**

Use the Open Enclave SDK to build applications that protect against different types of enclave with a consistent API surface that surrounds an enclaving abstraction and provides support for portability and flexibility in architecture.

- **Verify TEE Identities**

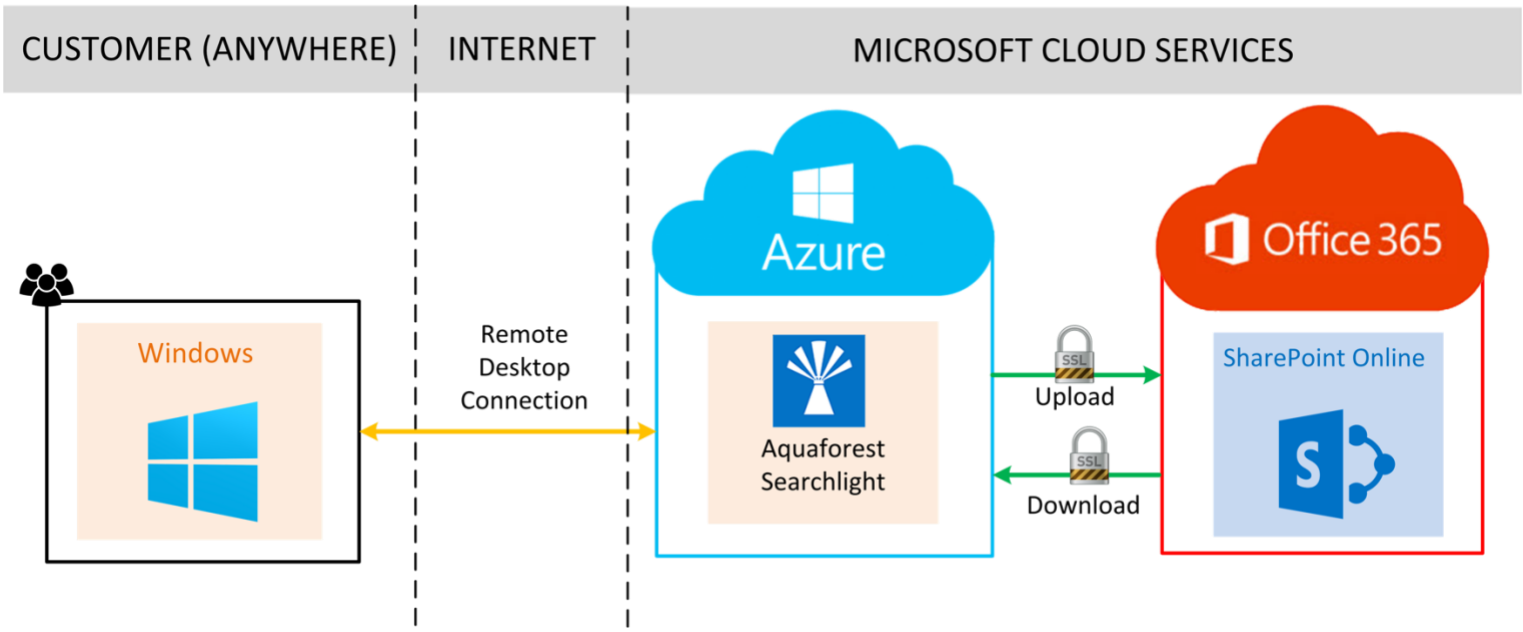
Along with validating the code inside them to determine whether secrets can be released or not. Verification is very easy and available using attestation services.

- **Harden Enclave Code With Microsoft Research Insights**

Explore the research released on new confidential computing apps, techniques for hardening TEE apps and tips on how to stop information from leaking out of the TEE.

Application Patterns of Confidential Computing

- Protect the integrity and confidentiality of data using, for example, SQL Server Always Encrypted technology
- Create trusted networks using, for example, Confidential Consortium Blockchain Framework.
- Combine multiple sources of data using, for example, secure multiparty machine learning
- Protect sensitive IP code using, for example, secured content licensing and DRM protection.



SharePoint on Azure

If you aren't ready for SharePoint Online just yet, that's not a problem because Azure provides the capability for you to host your SharePoint farms within their infrastructure. You can scale as required, saving money on infrastructure costs and, whether you require SharePoint for developing, testing, staging, producing, or even for disaster recovery, Azure offers everything you need.

Why Azure for SharePoint?

- **Rapid SharePoint Deployment and Scaling**

Set up SharePoint server infrastructure very quickly and set up your development and/or test farms. Scale your production deployments by adding more resources instantly. Use ready-to-deploy templates and images based on configurations already well tested to simplify your configuration and deployment and reduce the time takes to deploy complex farms down to just minutes.

- **Cost-Effective SharePoint Site Hosting**

With pay-per-minute billing and pay-as-you-go plans, you can save a lot of money. Azure offers benefits for subscribers to Visual Studio for development and testing to reduce the costs of software licensing. Extra servers can be set up instantly to help with scaling and load testing over the short-term and then removed when no longer needed. By paying only for what you use and using only what you need, your costs come down.

- **Move VMs Across Premises Seamlessly**

VMs in Azure that run SQL Server or Windows Server are no different to any on-site server. VMs can be moved easily between physical servers, hosting provided servers and Azure. This portability ensures that you can replicate your dev-test environments quickly and simply, along with any secondary production sites you have in Azure. And you can move them back when you need to with the minimum amount of fuss.

- **Run Microsoft Applications In the Best Place**

Azure cloud was built by the self-same people that built SQL Server and SharePoint and they have all been fully tested to ensure they work on Azure. With the licenses you already own together with the mobility of these licenses and Azure Hybrid Benefit, you can take advantage of the highest quality support across Azure, SQL Server and SharePoint. When you run SharePoint on Azure, you get your solution onto the same cloud platform that runs Microsoft Dynamics CRM Online and Office 365, providing full and smooth integration across everything.

Dynamics on Azure

Use Azure Dynamics to ensure that your business makes smarter decisions, to overhaul processes faster and drive the better growth of your business using the ERP (Enterprise Resource Planning) system that was built on and for Azure. Combined, these bring ERP, infrastructure, business intelligence, database services and compute together easily.

Why Azure for Dynamics?

- **Make Much Smarter Business Decisions, Faster**

Provide access to the BI (Business Intelligence) your entire company requires, whenever they need, wherever they are. With the integration of BI into your enterprise toolkit, you can transform data to provide much better and more valuable insights, enabling much better business decisions, faster than ever before.

- **Speed Up Your Business**

Take advantage of the ability to adapt and transform your business very quickly, keeping your company right at the front of your market. Changes to process development can be simplified, as can deployment, using a user-friendly, consistent ERP solution.

- **Grow Your Company At Your Pace**

Grow your company how you want to, where you want to and when you want. Whether it is new products being introduced, expansion into other markets or through acquisitions, Azure Dynamics offers the flexibility and the agility of the cloud to allow you to scale at the right pace.

- **Drive Your Business Performance**

Plan your business needs and anticipate your needs much better. Use one single holistic view to ensure your organizational risks are visible, helping your IT department to expand in ways you couldn't even consider before, all while continuing to provide full reliability, scalability and security.

Build-Your-Own

Use one of the Azure trusted partners to help build your Dynamics Solutions:

- **Edgewater Fullscope –** Use Fullscope to optimize business operations, cut costs, and drive business growth with the latest in ERP technology.
- **WiPro –** WiPro was developed to assist with digital adaption for businesses using hyper-automation, cognitive computing, robotics, analytics, cloud and emerging technologies.
- **Sonata –** Sonata Software provides innovative solutions for business using IP-based services, products and platforms.

Red Hat Solutions on Azure

Azure's Red Hat solutions provide you with the chance to deploy a reliable, secure hybrid cloud environment very quickly with the open source cloud architecture that more than 90% of Fortune 500 companies trust.

Why Red Hat on Azure?

- **Cloud Deployment Can Be Customized To Your Requirements**

Run your applications where needed now and move them as your needs dictate. With Red Hat solutions you can unify the management of your virtual, physical, public and private cloud environments. This enables you to build a production-grade platform for the development of both Linux and Microsoft .NET applications.

- **Unified Global Support**

When you use Red Hat solutions on Azure, the partnership gives you the only fully coordinated support for the industry that includes multi-lingual support engineers spread over 18 regions, an integrated system for support tickets, and a coordinated system from escalation and resolution without the time wasting, the stress and the hassle that goes with traditional support systems.

- **Continual Improvement to Security and Innovation**

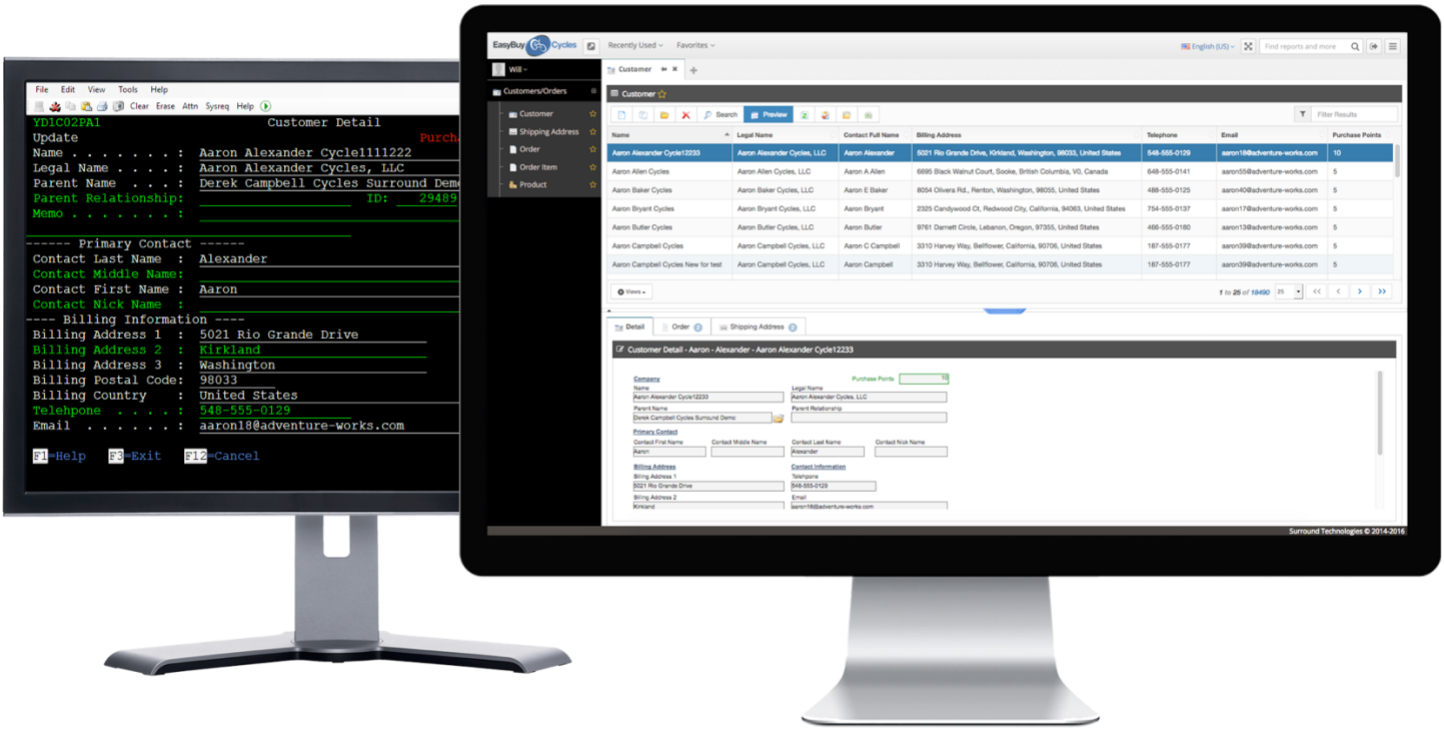
Global market intelligence company, IDC, say that most initiative for digital transformation will not have the right strategic architecture to enable scaling. With Red Hat, your business can fly over the boundaries with solutions that continue to improve all the time. With a joint security response team, you get active monitoring of all emerging threats and with joint engineering teams, you get the constant improvements that provide your deployments with more value.

- **Optimize Existing Red Hat Investments**

Optimize your existing Red Hat investments by transitioning them to Azure on the cloud and taking advantage of everything that Azure offers. Scale easily and quickly, pay for what you use and no more, and make savings on compute power. You can also speed your digital transformation up by using your team's existing Linux, Java and other skills.

- **Easily Administer and Secure Your Complex Hybrid Infrastructure**

Help your IT team to streamline their costs and build environments that are adaptable and scalable. Make use of unique hybrid capabilities, including unified management, portability and interoperability across the infrastructure and consistent development and deployment of applications.



LOB Applications

Your Line of Business applications can easily be modernized to meet changing needs and IT challenges that are constantly arising. Cloud technology is the starting point for all digital transformation and that enables much faster development, more security for applications, a reduction in costs and an increase in productivity throughout the entire organization.

Why Azure For LOB Applications?

- **Save Money and Drive Innovation By Modernizing Applications**

Metlife developed a brand-new LOB application for microservices, delivering a unified experience across well over 400 of their legacy systems. The result of this was 70% infrastructure consolidation and much better operational scaling.

- **Improve Business Agility and Productivity**

Alaska Airlines took advantage of what Azure has to offer by providing employees with the ability to respond to flight-loads that continually change by creating a mobile experience that works cross-platform for continuous and current productivity.

- **Make Faster Decisions**

TransAlta used Azure to build a business application and decision-making tool that analyzes their data from 11 different systems, enabling better responses to service calls out-of-hours. That project took just two weeks from deployment to pay for itself.

Microsoft Partners for LOB Applications and Solutions

- **SAP HANA**

With Azure Active Directory, management of user access is simple and you can easily enable sign-on with the SAP cloud platform

- **DocuSign**

Electronic signatures and electronic document sending using SharePoint Online

- **Docker EE for Azure**

Build your applications, sip them and run them anywhere using Docker EE, an integrated Azure platform

Development and Test

Deliver bigger and better features quicker than ever before using a comprehensive set of tools for development and testing so your team can collaborate effectively and deliver applications at cloud speed. Using on-demand, scalable infrastructure you can create consistent environments for developing and testing on your terms.

- **Create better Applications With More Time**

With a range of development testing solutions, you can leave your development team to do their jobs, to build top applications, while reducing the hassle and the time needed to manage development efforts.

- **Build For Multiple Platforms**

Introduce cross-platform functionality to your development and testing environment using your own preference of coding language to build and test applications on the platforms and devices in use today, including Windows, Linus, iOS, Android and more.

- **Create Dev-Test Environments Quickly**

Simply your dev-test environment process and speed it up. Provision VMs in seconds and pay by the minute. Set up any number of VMs to suit your needs, network them all and allocate them to developers. Maintain central control or allow your developers to self-provision, allowing for much better environment management.

- **Scalable Test Environments**

Replicate the real-world use for different scenarios and test applications at production scale, enabling you to quickly find and fix issues before release If you have your production environment on Azure, create a clone and get a view of how applications behave in the real world.

- **Maximize Control, Keep Waste to a Minimum**

Keep a tight control over resource usage and access utilization data (real-time) to minimize the waste. With advanced automation, you can cut the risk of errors; with unified management you can balance control with access and, with a range of enterprise-ready governance capabilities, you can control your costs, setting limits where needed.

- **Make Your Budget Go Further**

Experiment on Azure with low rates for your dev-test environment. Set up everything you need, as and when you need it and fully explore every scenario before production.

Monitoring

Gain full visibility into the performance, health and utilization of workloads, applications and your infrastructure. Be proactive in finding and fixing issues before they can have a negative impact on users and save time, focusing only on what is most important to your organization.

- **Gain Insights from Log Analysis**

Collect data, correlate it and search your application and systems data to gain intelligent insights across both cloud and on-site infrastructures. SLA can be better managed and you can get much better operational insight by cutting down the amount of time spent looking for anomalies across your hybrid IT environment.

- **See The Full Picture**

Get a view of network dependencies and applications across processors, servers and services, not just from Microsoft but from other providers too. Find and isolate problems and take advantage of accelerated root-cause analysis across multiple platforms, improving reliability and availability of all your applications.

- **Monitor Applications to Drive Business Intelligence**

Take your rich IT insights and convert it into business intelligence, unlocking more opportunities and focusing your efforts. Knowing how your applications are used on the network can help you to determine what users need and where you need to invest to have the greatest impact.

Trusted Microsoft Partners to Help Build Monitoring Solutions

- **BCS –** Responsible for delivering cloud and on-site solutions, helping business customers implement Dynamics GP and Microsoft Dynamics 365, as well as managing the implementations and extending them.

- **Dataprise –** A global leader in managed IT services, with over 250 certified experts and engineers on hand to help any business to thrive.

- **Unify Square –** Offers optimization for Microsoft Teams and Skye for Business, providing award-winning operations services and software and performance.

Business Intelligence

Azure DevOps solutions can help you to change the way you use company data to make fully informed decisions. Get much deeper insights so you can spot the trends as they happen and always know what's going on. Using BI (Business Intelligence) tools and solutions, your organization will always understand data and act on it quickly.

The Right Insight, The Right Hands

Everyone in your organization can have access to powerful BI and analytical tools to drive more efficient and faster decision making. Data from several sources can be combined to build better reports and gain better analytics.

Secure Integration and Management of Business Intelligence

Integrate with systems you already use by choosing a BI platform that is business ready and rich in features. Maximize your resources, monitor asset and data access, ensure full security and compliance with regulations and deliver a solution designed around your business requirements.

Bring Data Alive

Give customers access to valuable data at any time, on any device, easily. You can embed visual analytics that are fully interactive and up to date in your applications very easily without having to waste time and money writing code.

Use Power BI Solution Templates

Have your Power BI solution up and running very quickly; begin with an end-to-end template that is enterprise-ready and fully working that fully incorporates the best business and technical practices. Choose from apps such as:

- Microsoft Project Online
- Office 365 Adoption
- JIRA
- Microsoft Azure Enterprise
- Analytics for Salesforce
- GitHub
- And hundreds more

Big Data and Analytics

With Azure Big Data and Analytics you can make better decisions and deliver far better experiences with the ability to analyze, in real-time, huge amounts of data. With the right insights you can deliver intelligent actions that provide much better customer engagement, increase your revenue and keep your costs down.

Bring All Your Data Together

Every day, we see the volume of data expanding rapidly, be it from the traditional systems such as point of sale and the e-commerce websites to brand new sources of customer sentiment like Twitter and the Internet of Things sensors that provide an endless stream of real-time data using Spark and Apache Hadoop. If you can analyze an incredibly diverse dataset right from the outset, your business decisions will be more informed, predictive and holistic, not disconnected and reactive.

Big Data – A Valuable Asset

Regardless of how much data your organization holds, you can retain it for as long as you want. Rather than having to make tradeoffs in terms of cost on which of your data you will retain, you can retain the lot to meet both company standards and regulatory standards at prices you can afford. This is all made possible with Spark and Hadoop technologies together with the cloud.

Personalize Customer Experience

No two people want the same experience so give each of your customers a personal experience that adapts to changes in their behavior, right down to providing offers for recommended products with dynamic discounts. Suppliers can be provided with predictive purchase lists based on the order information at the time and historical data.

A Cost-Effective Supply Chain

Big data can be integrated across the entire value chain and advanced analytics may be used in real-time to ensure supply-side performance is optimized, saving money in the process. Embrace measures that are fully proactive, gaining a real-time view into your business supply chain, including assessing levels of inventory, prediction of product fulfillment requirements and see where backlog issues could potentially arise.

More Efficient

Analyze data to find the insights buried deep inside to become more optimal and efficient in business. From human resource organization and supply chain management to forecasting customer and staff requirements, Big Data and Analytics and can help you to understand every factor that affects your operational efficiency.

Modern Data Warehouse

You can build the hub you need to hold your data, be it unstructured, structured or streaming, enabling solutions to transform your business, such as Business Intelligence, advanced analytics, reporting, real-time analytics, and more. Revel in the benefits and advantages that fully managed Azure services like Databricks and SWL Data Warehouse offer, such as high performance, full flexibility and total security for all data.

Why Azure for Modern Data Warehousing?

With the tools and services that Azure offers you can:

- **Speed up time to market**

With SQL Server and Apache Spark industry-leading engines on hand you can ensure an increase in productivity. Take advantage of managed cloud services to get your modern data warehouse provisioned in just minutes and make use of over 30 data connectors in

Azure Data Factory, together with support from Talend and Informatica for information management tools to get your data integrated quickly. Provide your data engineers, data scientists and your business analysts with empowerment to use the language and tools that they are happiest using on big data.

- **Choose the Right Solution For Your Needs**

Quickly get started with a cloud solution or choose a hybrid option based on what your business needs. Only with Microsoft can you have the consistent advantages offered by SQL Server – the high performance, complete security and familiarity – either as a managed service in MPP architecture or in a private cloud. Cut your costs and reduce the complexity that comes with management of data transformation by taking full advantage of the hybrid integration experience. Lastly, a consistent user experience is perfectly possible with a common identity across on-site and Azure services.

- **Gain Insights on Any Data**

Get the flexibility you need to build machine learning models and deploy them, on-site or in the cloud. Choose your own data science tool and benefit from the support provided by open source innovation and the very best of Microsoft. Distribute your insights easily across the organization through integration with Power BI and many other leading visualizations and business intelligence tools like Qlik, Alteryx, Tableau, and MicroStrategy.

- **Full Peace of Mind**

With security features such as Transparent Data Encryption, threat detection, audit, Azure Virtual Network endpoints and Azure Active Directory built-in, you get the peace of mind that your data is fully secured. All Azure services fully comply with over 50 different geographical and industry certifications and are available over 42 different regions; you're covered wherever your data and your users are.

Business SaaS Apps

Serve and engage your customers much better by gaining and using business intelligence and insights from Azure, allowing you to build SaaS (Software as a Service) business apps. These apps will provide better operational efficiency, a more flexible scale, and total security for data, all the while significantly increasing your opportunity for revenue.

Why Azure for Business SaaS Apps?

- **Game-Changing Efficiency**

Take full advantage of what Azure offers to claw back the time traditionally spend on hardware and update management. Centralize all your customers into one multi-tenant installation that will reduce complexity, variety, costs and will fully scale with your

business. Make use of the full range of tools for machine learning and monitoring to create the environment required by your SaaS apps.

- **Protect Your Customer's Data**

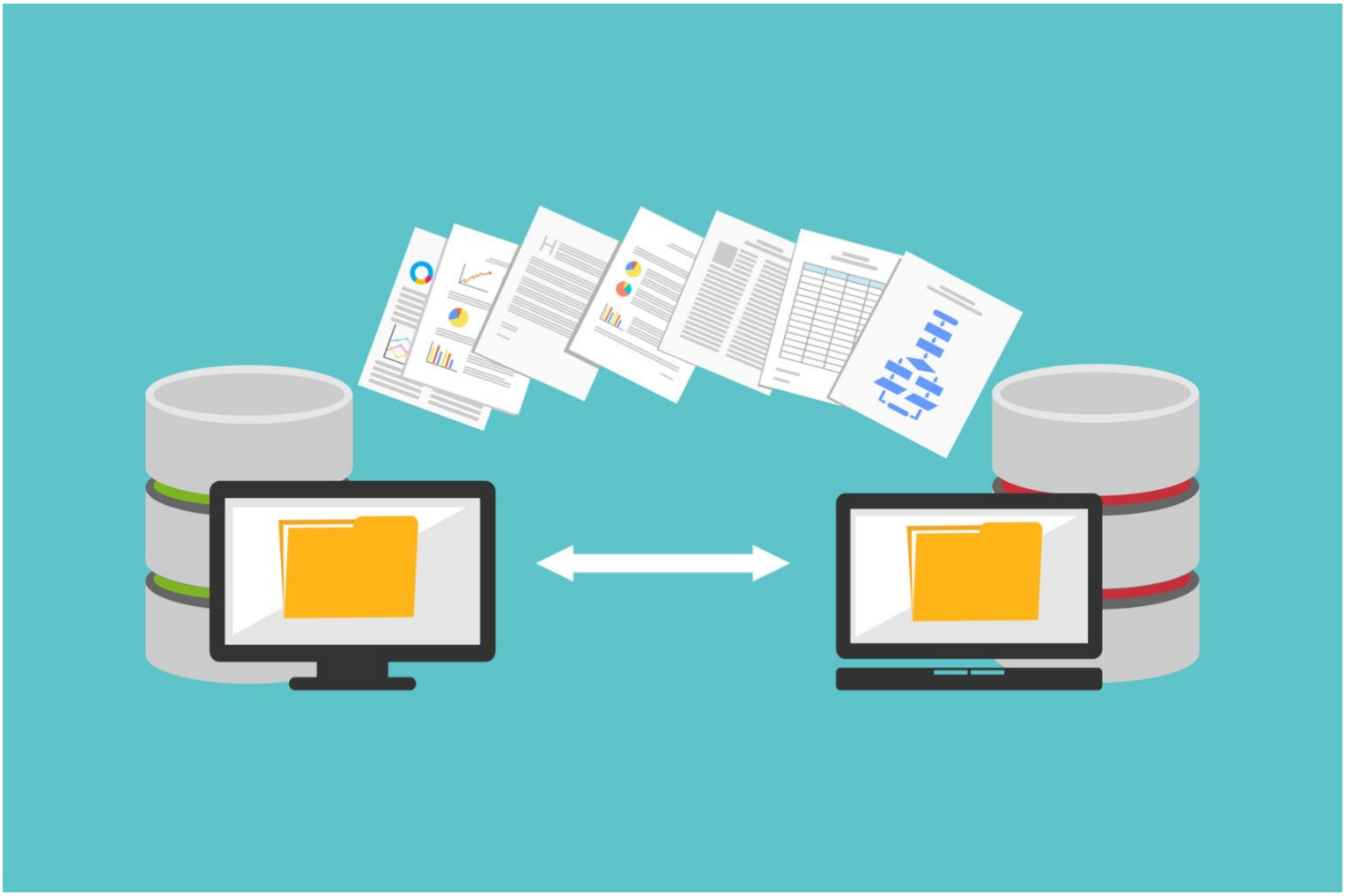
Your customers demand a secure environment and with Azure you can give it to them with the built-in highly available (99.99%) SLA, ensuring consistency in performance, along with multiple intelligent security layers to prevent any unauthorized or malicious access to customer data. By using Azure to build your apps you get the most comprehensive compliance coverage that any cloud service provider offers.

- **Engaging User Experiences**

Take advantage of rich experiences that are totally personalized, along with recommendations provided with machine learning algorithms, all ready to use, to deliver new and better value to all your customers. Business intelligence is embedded to help you provide visualizations that are interactive so your customers can gain insights into their own data.

- **A Flexible Platform on a Global Scale**

Retain the developmental environment that suits your business, regardless of whether you are starting from the beginning or transferring to the cloud. Take full advantage of an approach based on microservices or of containerization without having to change huge amounts of code and build a cloud platform that is reliable and that scales together with your business on a global scale.



Backup and Archive

Ensure your applications and your data are fully protected regardless of where they reside and avoid the expense of interruption to business and to ensure that you meet all compliance requirements. Extend your on-site backup storage and archiving systems securely to the cloud, cutting costs and reducing complexity while achieving full scalability and efficiency.

Why Azure for Backup and Archive Solutions?

With Azure solutions for backup and archive you can:

- **Increase your Capacity While Decreasing Costs**

As your enterprise data grow, keep pace with it while reducing the costs of management and deployment. Using a cloud solution that offers low costs, infinite scalability and a

fully tiered backup service will significantly reduce your forecasting risks and transform your commitments to capital expenditure to a cloud model on a PAYG basis.

- **Take The Hassle Out of Backup and Data Archiving**

Improve productivity in your organization by reducing the time spent on management and maintenance of your on-site storage infrastructure and software for backups. Simplify your backups and data archiving by using a combination of Backup as a Service (BaaS) and hybrid solutions for storage that will restore your applications and data easily from the cloud.

- **Compliance Goals Always Met**

Take full advantage of a range of policies designed to meet regulatory or business compliance requirements. Azure offers the most comprehensive compliance policy of any cloud provider, with more than 99 years of data backup retention on offer and the choice of any Azure region anywhere in the world for the storing your backups and data archives.

- **Keep All Branch and Remote Offices Running Smoothly**

Moving your storage system for backups to the cloud ensures you can save money in infrastructure investment for both branch and remote offices. Expensive intranet can easily be replaced with low-cost internet and you can choose your region for storing your data archives, ensuring your data is protected by enterprise-grade security, both at rest and in transit.

Disaster Recovery

Even the smallest of outages can cause you a huge disadvantage in competitive terms so make sure your business continuity plan has disaster recovery built-in for all your IT systems, big or small, without having to pay for a secondary infrastructure.

Why Azure for Disaster Recovery?

With Azure you can

- **Protect all IT Systems**

Achieve low targets for RPO (Recovery Point Objective) and RTO (Recovery Time Objective) for each and every IT system in your, in a simple and cost-effective way. Cut out the hassle of having to set up secondary datacenters, along with the associated cost, and tap into an almost infinite system of capacity at less than a moment's notice using Azure services for cloud-based disaster recovery.

- **Data Management, Protection and Security Unified**

Meet all your compliance and continuity business goals throughout the entire lifecycle of your applications and secure all your data using industry-leading security and protection, with encryption features built in.

- **Your Apps Work When You Need Them To**

When an outage occurs or you are hit with a disaster scenario, you can be assured that an Azure disaster recovery solution will protect your applications with native support for a whole range of enterprise applications; more support than any other cloud service provider offers. Have automated recovery plans in place to protect your apps and your data center up and running in hours, rather than taking weeks, even months to set up.

- **Perform Tests Anytime You Want**

When disaster strikes, the very last thing you want is for problems to arise. You can test your continuity plans or run dev-tests on copies of your production workloads whenever you want in Azure. And you can test brand new versions of your applications using live data copies and then send the new version straight into production in your data center seamlessly.

Digital Marketing

Engage with customers on a global basis with personalized digital marketing offers and experiences. Build digital campaigns and launch them quickly, campaigns that will scale automatically as customer demand increases. Analyze the effectiveness of your campaign and make improvements where needed with rich data analytics at your fingertips.

Why Azure for Digital Marketing?

With Azure solutions for digital marketing, you can

- **Create Timely, Personalized Customer Experiences**

No two customers are the same and all will require different content. With the Azure digital marketing platform, you can launch and update your marketing site quickly, based on the behavior of your users, feedback from customers or by moves made by competitors. To have an impact your digital marketing plan must connect with customers- right time, right place. With Azure you can build companion apps for mobile devices, allowing you to share the right offers with the right customers, wherever they are.

- **Forget Best Guesses; Optimize With Data**

You have one main goal – gain new customers and increase revenue and that means continually improving the performance of your campaign. With Azure you can use a range of campaign and marketing tools that will help you use predictive analytics and data to better understand your customers and their behavior, helping you to improve your campaigns.

- **Stay Ahead of Your Nearest Competitors**

One of the most critical factors in any marketing campaign is time to market. With Azure, your development team can get digital marketing experiences built quickly, making use of the tools they love and the skills they already have. With solutions for content management the owner of your campaign can create their content straight to your website and you can preview the changes as they happen, going live within seconds.

- **Be Ready For Your Campaign To Take Off**

When your campaign becomes hugely successful, you can ready to meet the increase in customer demand. To ensure that regional campaigns perform to their maximum, choose datacenters near to your customers for deployment. Where other services make a charge for maintaining maximum capacity on an ongoing basis, Azure scales with your business, up and down, to save you money on your campaign budget.

Digital Media

Digital media is the best way to transform your business, allowing you to educate and engage with your employees and to connect with and interact with your customers. With Azure digital media services you can build and deploy your video solutions quickly, scale as required and deliver your digital content wherever and whenever you want, on any device.

Why Azure for Digital Media?

With Azure digital media services, you can

- **Increase Engagement with Your Videos**

By introducing an element of personalization to your videos, be it your marketing campaign, in a classroom, on your e-commerce site or through a portal for customer services, your videos can drive engagement and provide your customers with the most vivid experience ever.

- **Connect with Your Audience**

Anytime, anywhere and on any device. Whether your customers are looking for entertainment or information, you can deliver the digital content they want, when they want it and on any device. It doesn't matter where they are located, or what their connection speeds are, you can provide your customers with the highest quality playback for the video content you deliver.

- **Gain Actionable Intelligence**

The digital media you provide offers a real treasure chest full of useful information. With leading, innovative machine learning you can find that information and use it. Make use of new ways to discover content by extraction characters, spoken word and emotions and automatically process audio and video feed to improve operations.

- **Use a Comprehensive Media Platform to Gain Business Agility**

Speed up time to market and gain huge benefits from your customer's feedback. With the most comprehensive and reliable of all cloud and media service providers, you can iterate very quickly and adopt a fully agile approach to your business.

- **Scale As Required**

As your videos go viral and your campaign begins to take off, the cloud can help you to scale as required on a PAYG basis, paying only for what you use. And, with more regions than Google and AWS together, Azure helps your business to expand with ease.

High-Performance Computing

Cast aside the limitations and the overheads your on-site infrastructure ties you to and tap into a system that offers unlimited resources to enable you to scale HPC (high-performance computing) tasks. You can run simulations, analyze data on a large scale, run financial models and experiment, all speeding up time to market.

Why Azure for HPC?

With Azure services and tools for HPC, you can

- **Use a Cray Supercomputer**

Use a Cray Supercomputer to run the most demanding workloads near to the Azure services that you already take advantage of. Complement your existing Azure virtual network by adding a dedicated Cray supercomputer and gain benefits in faster innovation, get access to more advanced services and consolidate your entire IT footprint.

- **Stay on Budget While Scaling on-Demand**

As your data demands grow and you have more to process, you can take advantage of elastic extension of compute capabilities by tapping into a range of cloud services. Using Azure's HPC capabilities you can scale as required while staying within your budget.

- **Achieve Results by Adjusting Access**

Scientific experiments are responsible for a significant rise in data and that rise means that there is a much higher need for sharing, processing and protecting that data With Azure HPS capabilities, you can bring scalable and collaborative access that is fully secure from anywhere and at any time to all your users.

- **Speed Up Time To Market**

By adding in flexible compute resources, you can add more detail and more scale, resulting in significantly improved results much quicker. The ultimate result will be an increase in productivity and your time to market will be much reduced.

- **Create Market Disruption**

It doesn't matter whether you are reinventing classic business apps, providing a new architecture for proven scenarios or pushing your data-driven into complete overdrive, you will need brand new architectures that are fast and are flexible. With Azure you can build those architectures, and watch them grow, shrink and adapt to customer demand, causing market disruption with your newest products.

Microservice Applications

Microservices are a style of software architecture. Applications within a microservice are made up of independent modules, each of which communicates with the rest through fully defined APIs. All of these modules are building blocks, decoupled and small enough that they can each implement one functionality.

Microservices architectures make it much simpler to develop applications and to scale them, as well as fostering collaboration between self-governing teams and helping them to get the latest functionalities to market much quicker.

Why Azure for Microservice Applications?

With Azure Microservices, you can

- **Build Your Services Independently**

Applications based on microservices are built as collections of decoupled services, each handling one action. Teams can build their services independently, verifying, deploying and monitoring each one.

- **Autonomously Scale Services**

Scale independent services based on their individual demands without any impact on the overall performance, instead of having to scale the whole app.

- **Choose the Best Approach**

Give your development teams the flexibility to choose the right approach for deployment, the right language, the right platform and the right programming model for each individual service.

- **Locate and Isolate Points of Failure**

When you use Microservices, you can isolate potential points of failure for each service, greatly improving both reliability and security. Individual service can be retired or even replaced without any effect on the rest of the structure.

- **Deliver Value Much Faster**

Your development teams can easily deploy independent modules very quickly and you can have several teams each working on a different service simultaneously, pushing features and functionalities into production much quicker.

You can also:

- Make your application lifecycle much simpler though Azure development tools and managed services
- Know that you can develop reliable and secure applications on a trusted platform fully certified for compliance
- Improve performance with managed and automated on-demand scaling
- Be more flexible and adapt to business needs much faster

Gaming

With today's games needing more powerful tools for development, flexible, global multiplayer support and brand new models for revenue, Azure has you covered.

PlayFab

PlayFab is now a fully-fledged part of the massive Microsoft family, offering a backend platform for live gaming and a very powerful way of helping independent studios get off the ground. With the service and features that PlayFab offers, you can boost customer engagement, revenue and retention while reducing costs using game services, LiveOps and real-time analytics.

Using Azure cloud services, you can build your entire gaming infrastructure on a gaming cloud that offers decades of experience. With Azure you get the building blocks needed to scale and customize what you began with PlayFab.

What Azure Offers

With Azure on your side you can:

- **Build Better Games**

And get them to market faster. Build a higher quality of game using an entire toolkit of solutions for game development

- **Launch And Scale on a Global Basis**

Launch your games globally and scale easily using Azure's building blocks

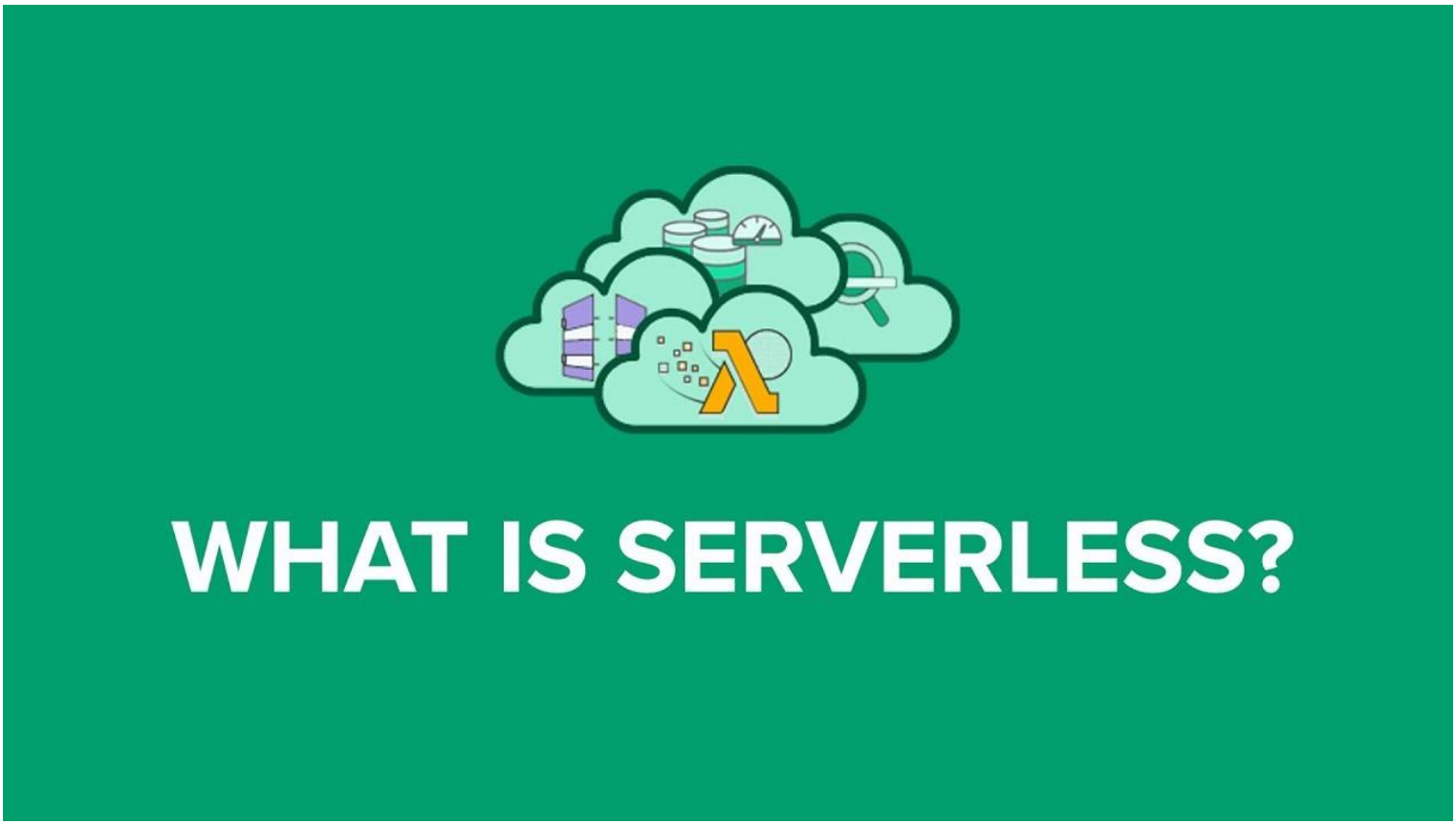
- **Take Advantage of Intelligent Monetization**

Using analytics, LiveOps and machine learning you can uncover ever more opportunities for monetization and revenue.

The Best Company

From the smallest of indie developers to the largest gaming names in the world, Azure is behind the best games that get the best results:

- **Ubisoft –** Immersive global multiplayer gaming powered by Azure on Rainbox Six Siege.
- **IO Interactive –** Hitman pushes way past expectation by real-time analysis of player behavior.
- **Tencent –** uses Azure Service Fabric to refine their gaming solution on the cloud
- **Next Games –** uses Azure Cosmos DB to scale games like The Walking Dead: No Man's Land on a global basis
- **Halo 5 –** uses Azure Cosmos DB to raise social gaming using Spartan companies
- **Microsoft Studios –** analysis of hundreds of billions of game events daily help Microsoft Studios to deliver fantastic experiences on the Xbox.



Serverless Computing

If you want to reduce the time you spend on infrastructure management and increase the time spent on solving your business problems, you should be using serverless computing on Azure. Everything, from provisioning to scaling and resource management is all done for you.

Why Azure for Serverless Computing?

With Azure's serverless computing, you can:

- **Build Your Applications**

And focus your attention on business logic without having to worry about servers. Infrastructure management is taken care of with Azure and you get your applications to market faster with a reduction in both operating and infrastructure costs.

- **Take Advantage of Managed Services**

With serverless computing on Azure, you get access to unique innovative programming models to keep your event-driven computing simple. With managed services for

messaging, data and intelligence, you can create applications that are highly available and scalable while enabling your teams to focus on finding solutions for business problems and not on the management of the infrastructure.

- **Increase Productivity**

With Azure serverless computing you get a full toolkit of modern tools, including those for development, management and deployment. Use Visual Studio or Azure CLI for development and debugging, Azure DevOps for continuous deployment and Application Insights for live monitoring to deliver the very best in cloud productivity.

- **Run Serverless Solutions Anywhere**

And at any time. Serverless computing functions can be used on-site, within a hybrid environment such as Azure Stack, on an IoT Edge device, and you can deploy them on any orchestrator like Kubernetes and in any other cloud. Azure offers flexible options for deployment, reusable code, and you can rely on one programming model for everything, regardless of your deployment target.

Azure Solutions By Industry

Azure solutions cover all industries and provide the answers to your most challenging business questions. Get all the products you need, the services and the third-party applications without having to flit between several providers.

Government

With Azure Government, agencies and partners can achieve improvements to services, faster innovation, better efficiency and total security. They can provide citizens with far better access to their services using a fully secured cloud platform, at any tie and anywhere. Data protection and increased productivity are just two of the benefits, with a third being a decrease in costs.

A secure cloud platform allows for the speedy delivery of productivity solutions that are flexible, trusted and fully integrated, and a range of analytics tools provides valuable insights.

Financial Services

With Azure, financial services companies can improve their customer experience, extend their on-site capacity as and when needed, optimize their risk management strategies and make compliance with regulations simple.

Financial services, including insurance and banking institutions, can rely on a platform that is trusted and fully secure, not to mention one that has the most comprehensive compliance portfolio ever. Analytics tools and applications provide the insights needed to optimize the entire company, from the backend right up to the frontend. A cloud-based consistent hybrid platform offers the opportunity to pay for only what is used, offering the opportunity to expand as needed and provide more value to the customers.

Retail

Azure for Retail offers the tools and applications needed for retailers to provide shopping experiences that change customer behavior and drive more sales. Analytics tools help retailers to gather valuable insights to drive more customer satisfaction and the tools to help boost productivity among employees.

Using a secure, reliable, multi-channel cloud platform, retailers can improve their forecasting and make real-time changes to keep pace with an ever-changing market. Using data-driven analytics, retailers can learn to understand their customers, enhance their current offers and create new streams of revenue to put them firmly ahead of the competition.

Manufacturing

Azure can help manufacturers to drive change and modernization to keep with the demands of their customers. By transforming into a smart factory, manufacturers can offer more innovative interactions using connected sensors and devices, as well as evolving to meet customer demand. Smart factories boost productivity and a range of tools and applications are on offer to help employees work smarter and boost customer satisfaction.

With Azure IoT, the entire manufacturing process can be streamlined and the supply chain becomes visible, allowing for optimal efficiency and quicker troubleshooting. And with Manufacturing 4.0, manufacturers can add customer feedback and real-time data for product usage into the design process, as well as increasing collaboration between customers, partners and teams, cutting costs and waste.

Health and Life Sciences

With Azure on hand, Health and Life Sciences organizations can help change the face of their business and optimize health outcomes using a cloud platform that is trusted, intelligent and secure. Engage patients, give care teams more empowerment and save money while providing better operational and clinical efficiency.

Provide patients with better relationships, reduce readmissions and provide more personalized experiences. Teams can be better equipped to focus their patient advice, productivity boosted and collaboration is much stronger, enabling better-informed decisions. Cut costs and improve efficiency, managing health trends and outcomes by using data analytics and IoT. With full security and privacy built into Azure, peace of mind is ensured along with full compliance with regulatory standards.

Gaming

Azure offers game developers and studios a real solution for every step of their development journey. With modern games requiring more complex and powerful tools, not to mention global support for multiple players and new models for revenue, too much time is spent on the backend; with Azure, developers can get away from that and spend their time focusing on making their games.

With Azure, developers and studios can build their infrastructures on a cloud that offers years of experience, along with every building block they need to customize and scale on a global basis. Azure offers a complete toolkit of development solutions to get high-quality games to market much faster.

Azure Products

With Microsoft Azure, organizations have access to a wide range of different services and products, covering all aspects of business and all designed to make the transition to the cloud, in full or in part, as easy as possible.

Azure AI

Azure is one of the most flexible cloud platforms, offering the widest range of AI tools which allow any organization to build next-gen smart applications, right where their data lives be it in the intelligent cloud, on the intelligent edge, on-site or a combination of all three.

A toolkit offering trusted AI services, including ready-built APIs like Conversational AI with Bot and Cognitive Services, right up to using Azure Machine Learning to build custom models, provides organizations with everything needed to achieve far more With the Axure AI platform you get enterprise-grade AI infrastructure, given the ability to run any AI workload at any scale from anywhere.

Azure AI offers:

- **Powerful and productive AI Tools –** a comprehensive set of tools that provide everything needed for creating innovative AI applications
- **Data and AI –** bringing AI to where you are. Build the next-gen applications easily using the skills your team possesses already and take advantage of container-based deployment of models to run AI anywhere
- **A flexible and open platform –** allowing you to choose the deep-learning framework and technologies that suit your needs and skills.
- **Years of experience –** from Research, through Windows, Bing, Xbox and a ton of other products driven by AI for decades.
- **Enterprise-Grade AI –** Microsoft are industry leaders in security and privacy and now, with Azure, you get comprehensive compliance with industry-specific and international compliance standards
- **Innovative hardware at hyperscale –** Microsoft is fully optimized for AI with the latest in GPU tech to the fasted AI models and networks, covering more than 50 global regions.

Azure AI Categories:

- **Azure Databricks -** Provides integrated AI services and scale on an almost limitless level.

- **Azure Kubernetes Service –** Provides organizations with the ability to speed up innovation; use high-performance analytics coupled with data science, fully optimized for Azure.
- **Azure Cosmos DB –** Make use of Kubernetes, Docker Swarm or DC/OS to scale and orchestrate containers
- **Azure SQL Database –** SQL is a multi-model database service, globally distributed, that helps businesses to integrate AI.
- **Azure Batch AI –** Industry-leading SQL database allows organizations to use native machine learning, Python and R languages.
- **Azure Data Lake Storage –** Deep-learning on an elastic, scale-out basis; allows AI development on a huge scale, parallel GPU-enabled basis.
- **Data Science Virtual Machines –** petabyte-scale for AI and data transformations.
- **Apache Spark for Azure HDInsight –** allows for mission-critical deployments in the cloud.
- **IoT Edge –** Use cloud intelligence on Edge devices or run advanced models on the Edge.

Compute

It doesn't matter whether you need to build new apps or deploy the ones you have, with Azure Compute, you get the right infrastructure to run all your apps. Make use of built-in capacity on the cloud and then scale as you need. Your applications may be containerized, you can deploy VMs for both Windows and Linux and you can take full advantage of the range of flexible options to help migrate your VMs to the Azure cloud.

Azure offers deep support for hybrid environments, allowing you to deploy apps as, when and where you need them. With a comprehensive identity solution built into Azure, you get complete endpoint protection and the addition of Azure Directory to help with access control, both on-site and in the cloud. One of the biggest benefits is the fact that you get to pay as you go, only paying for the resources you use, when you need them.

Azure Compute Categories

- **Virtual Machines –** helps you to provision Windows and Linus VMs using your own configurations in just seconds
- **Virtual Machine Scale Sets –** auto scale and create thousands of VMs very quickly, achieving high availability
- **Azure Kubernetes Service (AKS) –** Make deployment, management and all the operations of Kubernetes very simple
- **Azure Functions –** use a serverless architecture that is fully event-driven to accelerate development of your apps
- **Service Fabric –** Helps you to orchestrate containers and develop microservices easily on Linux and Windows
- **App Service –** create cloud apps for both mobile and web very quickly using a fully managed platform
- **Container Instances –** helps you to run containers with just one command and containerize your apps
- **Batch –** compute management and job scheduling can be done on a cloud scale, providing the ability to scale to potentially thousands of virtual machines – as few or as many as you need
- **Cloud Services –** use cloud services to create APIs and cloud applications that are highly scalable and fully scalable, leaving you to focus your attention on apps and not on hardware.

Containers

With cloud containers, you can easily develop containerized applications, updating them as needed and managing them much faster using CI/CD and developer tools. With Azure CLI or using Visual Studio's point-and-click publishing feature, you can scaffold your applications and scaffold them automatically and deploy them to an AKS cluster.

Docker containers can be built and debugged, and then iterated over several running containers. Visual Studio or Studio Code can be used to gain insight into the build processes offered by Docker and containers can be integrated into your DevOps and agile workflows seamlessly using Visual Studio Team Services and DevOps Project.

"Lift and shift" is simple with Azure; your existing applications can easily be shifted to containers and deployed across Azure Stack, Azure, or across your own data center ad you can easily set up a unified, flexible approach to building applications that can run on-site or in the cloud.

Using Container Registry you can manage a Docker private registry as one of your first-class resources on Azure and use CLI tools to manage your container images. Get run-time protection, scan for vulnerabilities, and full compliance using a choice of tools and use Azure Directory for single sign-on.

Lastly, use a compute service that suits you to scale your containers and orchestrate them – AKS (Azure Kubernetes Service), App Service or Service Fabric.

Azure Container Categories:

- **AKS –** use Kubernetes to scale and orchestrate your Linux containers
- **Azure App Service –** use Linux containers in a PaaS environment to deploy your APIs or web apps
- **Azure Container Instances –** can help you to burst elastically from your AKS cluster
- **Azure Batch –** use containers to run compute jobs that are repetitive and time-consuming
- **Azure Service Fabric –** easily lift and shift your .NET applications to microservices with Windows Server containers.
- **Azure Container Registry -** regardless of Azure deployment, you can store your container images and manage them easily.

Databases

No matter where your data is, be it on-site, in the cloud or a combination of both, Azure will help you to unlock the potential by providing a complete range of enterprise-grade, secure database services that support many database engines, including open source ones.

All of the database services offered by Azure are fully managed which leaves you plenty of time to look for new ways to engage customers and unlock more potential revenue opportunities. A combination of high availability and enterprise-grade performance provides the ability for quick scaling, reaching global distribution without having to worry about the expense of downtime. Your developers can use top-level innovations including full security built-in, threat detection, automatic monitoring, automatic tuning to improve performance and much more. Plus, the addition of financially-backed SLAs means full protection for your investment.

No matter what you build, be it an app, service or something else, Azure can help you to get it quickly to market, get wide distribution and manage it with ease and confidence.

Azure Database Categories

- **Azure Cosmos DB –** multi-model database, distributed globally, that provides NoSQL choice support, SLAs and industry-leading performance
- **Azure SQL Database –** a relational database, fully managed and providing quick provisioning, on-the-fly scaling, and with security and intelligence built-in.
- **Azure Database for MySQL –** another fully managed relational database, scalable, high-availability and built-in security.
- **Azure Database for PostgreSQL –** Postgre relational database, fully managed, scalable, highly available and with built-in security
- **SQL Server on Virtual Machines –** provides the means for cloud-hosting of enterprise SQL Server apps
- **SQL Data Warehouse –** elastic database, fully managed, with security built-in at every scale level at no additional cost
- **Azure Database Migration Service –** migrate databases to the cloud without needing to change any application code
- **Azure Cache for Redis –** scalable fast applications powered by low-latency, high throughput data access
- **Table Storage –** store for NoSQL key values, enabling fast development using huge datasets that are semi-structured
- **Azure Database for MariaDB –** scalable, fully managed Maria DB relational database with built-in security and high availability.

Developer Tools

With Azure developer tools, you can build your cloud applications, deploy and manage them easily, regardless of the language or platform you use. Microsoft provides a wide range of tools for developers, plenty of SDKs and fully features IDEs and editors, all with Azure support built in.

Azure Toolkit for Azure

With the Azure Toolkit for Eclipse, Spring Boot and Java EE web apps can be created, developed, configured, tested and deployed easily to Azure on Windows, Linux or Mac OS, using the Eclipse environment. The toolkit offers all the required Java API clients, including Storage SDK, Azure Management SDK, Java Database Connectivity Driver for SQL and Application Insights SDK.

Azure Toolkit for IntelliJ

Using Azure Toolkit for IntelliJ, you can do pretty much the same with Java web apps and Hadoop and Spark jobs as you can in Eclipse, deploying them to Azure from all of the supported platforms. With this toolkit, you get the right tools and templates for both HDInsight users and Java developers, all in one place.

Azure Tools for Maven

For developers who use Maven, Azure has plenty of tools, plugins and packages to help build services and interact with them on Azure. The Java API clients are all available, such as Storage SDK, Azure Management SDK, JDBC Driver for SQL and Application Insights SDK.

Azure Developer Tools Categories

- **Visual Studio -** provides everything needed to develop cloud-scale apps in Azure, as well as debugging, deploying and managing them, all with an IDE packed with features
- **Visual Studio Code –** a lightweight editor to help you edit your code and debug it fast on Windows, Linux and Mac OS. Studio Code has been streamlined to help easier building and deployment of Java apps and Node.js apps t the cloud.
- **SDK's –** Download SDK's specific to computer languages along with the tools needed for your platform. Supports Go, Python, Java, .NET, Node.js and more
- **CLIs –** cross-platform command line interfaces to help create services and manage them along with automating repetitive and common Azure tasks.

DevOps

It doesn't matter whether your business is just beginning its DevOps implementation is whether your existing one needs to be integrated with processes and toolchains, Azure DevOps technologies make life much easier, providing the tools to build an end-to-end delivery pipeline that is fully secure. This means less time needs to be spent on tool maintenance, leaving more time to focus on your customers. With Azure DevOps, you can build, release, test and monitor your mobile and cloud applications easily and reliably, continuously delivering innovations.

One more thing you can do with Azure is to use those DevOps tools you are already familiar with, such as Jenkins, Chief, Terraform, and Ansible. Azure provides full integration with all the most popular third-party and open source services and tools so you get more to deliver the best applications and software by spending less time integrating your workflows and tools.

Azure DevOps Categories:

- **Azure DevOps –** DevOps services for your development teams to share their code, track their work and get the software shipped.
- **Azure DevOps Projects –** CI/CD – continuous integration and continuous deployment created easily with a couple of clicks; any application, any language on any Azure service.
- **Visual Studio App Center –** build your apps automatically for applications on Mac OS, iOS, Android and Windows. Test them, distribute them, deploy and monitor them from one central place.
- **Azure Lab Services –** easily and quickly set labs up for testing, classrooms, development or trials
- **Application Insights –** Detect exceptions and issues with performance; perform 'triage' and diagnose them easily in web services and applications
- **Azure DevTest Labs –** Create your cloud environments with templates that are quick to set up and reusable. Include cost management tools and integrate easily with your existing toolchains.

Identity and Access Management

IAM, or Identity and Access Management is all about how you keep your resources secure. With Azure, you get a range of identity and access solutions, helping you to defend and protect your data from malicious logins, and your credentials are secured using access controls that are fully risk-based, tools to help protect identity and the strongest of options for authentication, all without any disruption to your business productivity.

The main feature on offer by Azure to help with this is the Azure Active Directory. An integral component of many Azure services, Azure AD helps to centralize IAM so that deep security is enabled, along with productivity and management across apps, devices, data and infrastructure. Azure AD works with applications in the cloud, in-site and in hybrid environments, as well as on mobile devices. Using just one identity, users will be able to launch all their applications from one web panel that is simple to access and use, regardless of platform.

And Azure AD makes collaboration with external users easier while maintaining full control over gets to see and use your data. With more control over IAM, businesses can cut costs and increase the efficiency of their IT teams, while maintaining full security and threat detection without any decrease in business productivity.

Azure Identity and Access Management Categories:

- **Azure Active Directory –** provides all the tools necessary to help you protect identities and control and manage access to data, both in hybrid and in full cloud environments
- **Azure Active Directory B2C –** B2C, or Business to Consumer, is a secure service that offers the tools to help manage customer identities and keep them protected, as well as assisting with access management, using a range of security tools and features
- **Azure Active Directory Domain Services –** join together your VMs and a domain without the need to deploy any domain controllers.
- **Azure Active Directory Privileged Identity Management –** provides full management and control of data access to resources in all Azure resources, along with other Microsoft online services such as Office 365.

Integration Tools

With Azure integrations tools and services, you can integrate your data, applications and enterprise processes seamlessly, both on-site and in the cloud. Azure makes bringing your workflows together simple, making them scalable and consistent and it makes it easier for your developers to create opportunities for brand new business models by exposing you APIs for them to see.

By combining Azure Logic Apps with BizTalk Server, your integration is simple and your existing investments can be easily extended to the cloud. Plus you can add other Azure services to gain new insights from all your connected systems.

Azure Integration Tools Categories:

- **Logic Apps –** create your workflows and orchestrate all your business processes, connecting unlimited service together, on-site and in the cloud.
- **Service Bus –** helps you to connect your cloud-based services and applications to those on-site to enable the implementation of messaging workflows that have deep security built-in
- **API Management –** enables you to securely publish your APIs for both external and internal developers so they can use them when they connect to backend systems, regardless of where they are hosted
- **Event Grid –** allows you to connect all supported third-party and Azure services together using an event-routing service that is fully managed together with a publish-subscribe model that makes developing event-based apps simple.

IoT

With Azure IoT, you can drive digital transformation by using the insights you gain from connected devices. Those insights can easily be turned into actions using powerful applications built on the Azure IoT platform.

Azure IoT helps you to reduce your costs, your complexity and speed up time to market using a range of fully managed IoT services designed for each industry and for scenarios such as predictive maintenance, remote monitoring, connected products and smart spaces.

IoT SaaS is simple and is fully managed, allowing you to build your IoT applications to production grade in hours, not days or weeks, all without needing to get involved the in the backend infrastructure, without the need to add staff or to learn any new big data or cloud skills.

Plus you can use Azure's open source IoT template range, giving you far more control and flexibility through solutions that are fully customizable to your requirements. These templates are designed with all the common IoT scenarios.

Azure IoT Categories:

- **IoT Hub –** helps you to connect and monitor billions of IoT assets, managing them with ease
- **IoT Edge –** extend your cloud analytics and intelligence to all your Edge devices
- **Azure Digital Twins –** Helps you to build a range of next-gen IoT solutions for spatial intelligence
- **Azure Sphere –** Connect your MCU-powered devices securely from silicon to cloud
- **Azure Maps –** use a range of secure and simple location APIs to give your data geospatial context
- **Event Grid –** event delivery at a reliable level and a huge scale
- **Stream Analytics -** get real-time processing for data streams from millions of IoT devices
- **Time Series Insights –** benefit from the ability to
- explore time series data and analyze it from any IoT device
- **Azure Cosmos DB –** make use of a multi-model database, globally distributed for any scale you need
- **Logic Apps –** completely automate the way you access and use data across all clouds without the need to write any additional code.

Management and Governance

With Azure Management and Governance tools built right in, your system admin and your developers can ensure that your enterprise resources are fully secure and compliant, in the cloud and on-site. You can keep an eye on your applications and your infrastructure, provision your resources and configure them, update your applications, analyze any threats,, back your resources up, build a disaster recovery plan, automate your processes, ensure policies are applied and manage all your costs, throughout the entire life-cycle of all your IT requirements.

Azure Management Categories:

- **Azure Monitor –** gain important visibility into the status of components on the Azure platform
- **Log Analytics –** collect machine data from the cloud and on-site, search it and visualize it
- **Application Insights –** diagnose issues with performance by using instrument applications
- **Network Watcher –** monitor your network and diagnose any issues that arise

Azure Configuration Categories:

- **Automation –** manage your resources by automating, configuring and updating them
- **Azure Advisor –** manage your Azure environment better with personalized recommendations
- **Azure Resource Manager –** Deploy Azure resources and manage them more effectively
- **Scheduler –** create scheduled work for applications, maintaining and invoking it when needed
- **Traffic Manager –** route traffic coming into your network for better availability and performance
- **Cloud Shell –** use a CLI experience to manage Azure
- **Azure Managed Applications –** better manage deployed solutions for all your customers
- **Microsoft Azure Portal –** manage your Azure environment and personalize it to your requirements
- **Azure Mobile App –** Connect to resources in Azure whenever and wherever you want

Azure Governance Categories

- **Cost Management –** gain transparency into what your cloud resources are costing you
- **Azure Policy –** set policies and monitor compliance on all resources
- **Azure Blueprints –** enable repeatable, quick creation of governed environments

Azure Security and Protection Categories

- **Azure Backup –** Back your resources up and protect against loss of data
- **Azure Site Recovery –** deliver VMs that are highly available and have disaster recovery built-in
- **Security Center –** Secure and protect your resources from threats

Azure Migration Center

When you sign up to Azure you are signing up to the only hybrid cloud service that will provide you with migration paths that are both flexible and cost-effective. With Azure Migration Center you start your journey by assessing your onosite data, apps and infrastructure, work out and map dependencies and determine their priority level for migration to the cloud.

With a series of free, powerful tools for assessment, migration and cost management at your disposal, you can move all your resources with complete confidence, automating the entire migration with the minimum amount of downtime. Performance and ROI are maximized, cloud resources are streamlined and compliance with standards are all assured in a secure Azure cloud environment.

And Azure is also cost-effective in terms of a Windows Server destination, making Windows Server workloads much more cost effective – Windows Server in Azure with Azure Hybrid Benefit and Azure Reserved Virtual Machine Instances is three times lower in cost that Windows Server in AWS. Not only is moving to the cloud cheaper, but it is also cost effective after the migration too, with plenty of opportunity for savings.

Azure Migration Center Categories:

- **Azure Migrate –** complete system to help you assess, migrate and manage your VMs to Azure cloud as well as managing resources after the migration
- **Azure Site Recovery –** helps organizations to migrate on-site machines over to the cloud, including the ability to run test migrations to ensure everything works and maintain business continuity with a disaster recovery service built-in
- **Cost Management –** helps you to manage and optimize your cloud spending while getting the best out of the cloud
- **Azure Database Migration Service –** helps migrate on-site databases with the minimum of fuss and disruption
- **Data Box –** a very secure shock resistant appliance used for Azure data transfers

Networking

Azure networking will help you to connect your on-site and cloud services and infrastructure, providing users and customers alike with a professional and smooth experience. Built-in networking services ensure that your all-in or hybrid cloud strategy is fully supported, offering the opportunity to maximize the potential of your workloads, open source solutions and Azure solutions with secure connections and very reliable performance.

Azure Networking Categories:

- **Virtual Network –** helps with connecting everything from your VMs to VPN connections coming into the network
- **Load Balancer –** helps balance your in and outbound connections and any requests to service endpoints or applications
- **Application Gateway –** optimizes the delivery from your server farms while using a web app firewall to keep your applications secure
- **VPN Gateway –** use the internet securely to gain access to Azure Virtual Networks using VPN gateways offering high performance
- **Azure DNS –** ensures you get the fastest DNS responses and the highest availability for all domain requirements
- **Content Delivery Network –** speeds up high-bandwidth content to global customers
- **Azure DDoS Protection –** provides protection to all your applications from DDoS threats and attacks
- **Traffic Manager –** helps with optimal traffic distribution to services spread across Azure regions with the provision for responsiveness and high availability
- **ExpressRoute –** provides private network connectivity to gain access to cloud services from corporate networks, acting as though they were in your own on-site data center
- **Network Watcher –** monitors networks and diagnoses conditions at scenario level
- **Azure Firewall –** offers native capabilities for firewalling with high availability, no maintenance and unrestricted scalability in the cloud
- **Virtual WAN –** connecting retail locations, business premises and sites securely using a Virtual WAN portal
- **Azure Front Door Services –** a scalable delivery point with enhanced security for microservice-based global web apps

Security

With Azure security at your disposal, you can strengthen your cloud workload security using a variety of security services built-into the cloud. You can protect all your data, your applications, and your infrastructure very quickly using Azure security services. Every service provides you with security intelligence not found anywhere else to help you identify ever-evolving threats, providing you with the tools and intelligence needed to respond fast and minimize damage.

With Azure security, you can quickly implement a many-layered security strategy across data, identity, hosts and your networks. Security management is unified and advanced threat protection enabled across your hybrid cloud environment.

Azure Security Categories:

- **Security Center –** unify management of your security and ensure that advanced threat protection is enabled for both in-cloud and on-site workloads
- **Key Vault –** keep your cryptographic keys safe, along with other secrets in use by cloud services and apps
- **Azure DDoS Protection –** keeps all Azure resources safe from DDoS threats
- **Azure Information Protection –** Helps to control and secure your documents, emails, and sensitive data that is shared externally
- **Application Gateway –** keeps your applications protected from common exploits and vulnerabilities on the web using a built-in firewall for web apps
- **Azure Active Directory –** ensure synchronization of all on-premise directories and enable single sign-on
- **Azure Active Directory Domain Services –** joins your VMs to a domain without the need for domain controllers
- **Security Center –** ensure management of security is unified and threat protection is enabled across all hybrid cloud workloads
- **VPN Gateway –** ensure cross-premise secure connectivity
- **Azure Advanced Threat Protection –** detection and investigation of advanced attacks, both in-cloud and on-site

Storage

With Azure storage you can take advantage of highly scalable and secure cloud storage that keeps your data infrastructure fully protected while you concentrate on producing high-quality apps and services for all your customers. Your on-site data can be integrated with cloud data to provide intelligent insights and you can scale on a global basis, running even the most demanding of workloads while continually meeting requirements for privacy and compliance.

Azure Storage Categories:

- **Disk Storage –** provides secure, scalable storage for all VMs
- **Blob Storage –** provides hugely scalable and secure storage for all data without a structure
- **Archive Storage –** provides cost-effective solutions for data that is not accessed very often
- **File Storage –** provided secure sharing for cloud files
- **Queue Storage –** provides secure storage for communication on a message basis between your apps
- **Avere vFXT for Azure –** allows you to run file-based high-performance workloads in the cloud environment
- **Data Box –** allows you to complete offline, secure migrations of large data amounts into Azure Storage
- **Azure Backup –** provides simplification for the process of protecting data and keeps you protected against ransomware
- **StorSimple –** provides cost-effective solutions for enterprise-grade hybrid cloud storage
- **Azure Data Lake Storage –** provides data lake storage that is hugely scalable
- **Managed Disks –** provides persistent and secure disk storage for your Azure VMs
- **Storage Explorer –** allows you to view resources for Axure Storage and interact with them
- **Azure NetApp Files -** provides a very powerful solution for hybrid NFS (network file system) file shares

Web Applications

With Azure for Web you can take advantage of a massive range of resources that help you to build your web apps quickly and deploy them fast with a fully managed platform – no more requirement to manage the infrastructure as it is all done for you.

Azure Web Application Categories:

- **App Service –** provides a fully managed platform for building web apps at your own scale using Java, .Net Core, Node.js, Docker and many more. You can quickly launch your website, taking full advantage of CMS support from Azure Marketplace, and use built-in CI/CD to accelerate feature updates.
- **Content Delivery Network –** speed up the delivery of any high-bandwidth content, whether it is video streaming, applications or stored content to global customers
- **Media Services –** services that allow you to encode your audio and video, store it and stream it at scale, deliver OTT and broadcast videos and make use of analytics to get intelligent insights about your video files
- **Azure Search –** allow you to implement a search service that is fully managed and can help you to steer clear of issues arising with scaling, index corruption, service and service availability
- **Azure SignalR Service –** allows you to provide web apps with real-time functionality features like co-authoring, chat rooms, instant broadcasting and live dashboard
- **Azure Maps –** allows you to add maps to your web apps, along with searches, routing and current traffic using a range of geospatial services
- **Azure DNS –** provides high-speed DNS responses along with high availability for all your domain requirements
- **Application Gateway –** helps you to optimize delivery from your server farms while ensuring that a web application firewall protects your applications, keeping them secure.

Azure Products Detail

AI and Machine Learning

- **Azure Batch AI -** with Azure Batch AI you can experiment, training AI models using GPUs. You can run experiments in parallel, saving time and take advantage of a managed infrastructure
- **Azure Bot Service –** build intelligent bots, deploy them and manage them so they interact with your users naturally on Skype, apps, websites, Cortana, Facebook Messenger, Microsoft Teams and many more. With a full bot-building environment at your disposal, you can build a natural conversationalist and only pay for the resources you use.
- **Azure Databricks –** speed up AI and big data analytic solutions using Databricks, an analytics service based on Apache Spark. Quickly set up your environment and easily auto scale, collaborate and apply your existing skills with Python, R, Scala and SQL support built-in.
- **Azure Search –** Search-as-a-Service allows you to add cloud search capabilities to any application or website with the language stack used in Office and Bing. Finetune your results and build rich ranking models to tie business goals and search results together.
- **Bing Autosuggest –** add intelligent type-ahead capabilities to your website, helping users to quickly complete queries. Users spend less time typing and make better use of automated suggestions
- **Bing Customer Search –** build an ad-free search tool to fit your specific requirements using the Custom Search API. Provides powerful ranking and document processing with a simple and fast setup.
- **Bing Entity Search –** using the Entity Search API, you can infuse knowledge search into your app's existing content. Search several entity types to find the relevant one based on the submitted search term.
- **Bing Image Search –** using the Image Search API build an image search tool to help users find images on the web. Results will include image metadata, thumbnails, image URLs, and much more
- **Bing News Search –** allow users to search for news articles across the web using the News Search API. Results will include provider info, related news, news article images, and more.
- **Bing Speech –** allows apps to talk back to a user, converting text to audio and back again. Build a new generation of smart apps using the Text-To-Speech API.
- **Bing Spell Check –** use the Spell Search API to add spell checking capabilities for web searches or choose proofing for documents. Both options allow you to make sure your website is as perfect as it can be.

- **Bing Video Search –** use the Video Search API to locate videos anywhere on the web. The results will tell you the video length, creator, view count, encoding format and more.
- **Bing Visual Search –** provides users with an incredibly rich visual experience. Add your own business product images and similar images and use Visual Search to identify entities and objects.
- **Bing Web Search –** documents that have been indexed using the Web Search API can easily be retrieved. Get better query performance and narrow the results down using several filters.
- **Cognitive Services –** add intelligent algorithms to apps, bots and websites to understand and interpret users through communication. Supported communication types include vision, hearing, and speech.
- **Computer Vision –** categorize visual data and process it, extracting actionable and rich information. Perform moderations to the images, assisted by machine learning, to curate services.
- **Content Moderator –** Machine-assisted content APIs for detecting unwanted and offensive images, unwanted and profane text, and moderation of adult content in videos. Review tool built-in for best results.
- **Custom Speech –** allows you to create custom acoustic and language models, tailored to your users. Customize your speech recognition endpoint and use RESTful APIs to send requests to it.
- **Custom Vision –** customize state-of-the-art vision models as per your own use case. Upload the labeled images and Custom Vision Service will do the work, leaving you to export fully trained models as Docker containers or to a device with a single click.
- **Data Science Virtual Machines –** comprehensive environment of preconfigured virtual machine images for data science, deployment and development. Fully tested using popular ML, analytics and AI training tools
- **Emotion –** use the Emotion API to build emotion recognition into apps. Using ML, a facial expression is analyzed, using the Face API, to return one of several emotions.
- **Face –** the Face API allows you to detect faces in images, identify them, analyze and organize them. Images can be sorted into groups and previously tagged people identified; can be run in the cloud or on-site
- **Machine Learning Service –** easily build ML models and train them faster, deploying to the edge or cloud. Latest open-source technologies supported, including PyTorch, Jupyter and TensorFlow, with the ability to scale as needed. Use CI/CD to track experiments, manage models and deploy easily.
- **Machine Learning Studio –** managed cloud service to help you build solutions for predictive analytics, deploy and share. Browser-based environment, simple drag-and-drop with no need to code.

- **Microsoft Genomics –** to help you power your genome sequencing and insights from research. Fully covered under HIPAA BAA, with global coverage, PAYG pricing and an API for integrating with solutions from partners.
- **Language Understanding –** easily teach apps to understand user commands with an ML-based service. Build language understanding into IoT devices, apps and bots and create custom models that improve continuously
- **Linguistic Analysis –** simplify the concepts of complex language using the Linguistics API. Split text into tokens and sentences, use part-of-speech tagging and parse the text for deeper understanding.
- **QnA Maker –** use your own content to build a QnA bot and train it to respond in a natural manner. The simple interface allows you to edit QnA pairs and publish as an API endpoint. QnA Maker is part of the Azure subscription, a fully hosted model with hosted components and can be integrated with other APIs
- **Speaker Recognition –** use the Speaker API to add intelligent voice verification into apps. Use their speech to identify and verify who they are.
- **Speech Translation -** use the Speech Translator API to integrate real-time translation into apps. 10 languages are supported for translation and you can customize the translation system to your requirements.
- **Speech to Text –** this API is part of the Cognitive services tool and provides assistance in overcoming barriers to speech recognition, such as background noise, vocabulary or speaking style. To produce the output, several APIs are combined and these can be customized as per your requirements and your data.
- **Text Analytics –** using the Text Analytics API you can evaluate topics and sentiment easily. Build the API into your apps and website to better understand what your users want.
- **Text to Speech –** use the Text to Speech API to produce services and apps that speak naturally to your users. As part of Cognitive services, the API allows you to convert text into audio close to real time, thus improving usability and accessibility for your customers. More than 45 languages and 75 voices are included, male and female and internal parameters may be customized.
- **Translator Text –** use a REST Translator API integrated into your website, tools, applications or any other solution that needs support for multiple languages. Build to translate on multiple services such as customer support, e-commerce, messaging and more.
- **Video Indexer –** a useful tool that automatically helps you find insights in your videos without the need for code. Simplify app development by embedding widgets, using your choice of language and use AI to extract intelligent insights.

Analytics

- **Azure Databricks –** analytics platform based on Apache Spark that allows for fast acceleration of AI and big data solutions. Collaboration on shared projects is simple and support is built-in for Python, R, Scala, SQL, along with libraries like PyTorch, TensorFlow and Scikit-Learn. Integration with Azure AD allows you to build a modern data warehouse.
- **Stream Analytics –** develop and run parallel analytics in real-time on several IoT and non-IoT data streams. Use a simple language similar to SQL and custom code when your scenarios are more advanced; no infrastructure management means on-demand data processing, instant scaling and paying per job.
- **SQL Data Warehouse –** use a fully managed data warehouse in the cloud to unlock new data insights. Elastic scaling of resources, unlimited storage, built-in auditing, threat detection and automated administration are all included and you can easily integrate with other Azure services to build one modern data warehouse.
- **HDInsight –** run open-source frameworks like Spark, Apache Hadoop and Kafka to process huge data amounts quickly. Set up clusters of big data on demand, scale as needed and pay for what you use – no more.
- **Data Factory –** create data integration at enterprise scale, schedule and manage it with a hybrid data integration service. Work with your data where it is – on-site or in the cloud with full security and take advantage of 70+ data source connectors to accelerate integration projects. Lift and shift SQL Server Integration Services packages to Azure and increase productivity, lowering total cost of ownership.
- **Data Lake Analytics –** process even the largest of big data projects in just seconds; no infrastructure, no servers, clusters or virtual machines to work about. Processing power can be scaled instantly up to thousands of Data lake Analytic Units per job and you pay only for the processing you use.
- **Event Hubs –** real-time, fully managed data ingestion. A simple service, trusted and fully scalable, allowing you to stream millions of events every second from any source. Build dynamic pipelines for data, respond to challenges instantly and use the geo-replication and geo-disaster recovery features to continue processing during emergencies.
- **Power BI Embedded –** allows you to embed data visualizations, interactive, into your apps. Minimize development effort, create your visuals for free, access SDKs and API libraries, and gain valuable insights from anywhere.
- **Azure Analysis Services -** Azure Resource Manager helps you to create an Analysis Service instance in seconds and to move your models to Azure Analysis Services to gain the flexibility, scale and other benefits of the cloud. Combine multiple data sources into one BI semantic model with a simplified data view and reduce the time to insights on the large datasets. Control access to data models and release solutions securely.

- **Apache Spark for Azure HDInsight –** an open source framework for processing large data analytic applications. Apache Spark in the cloud is faster and is commonly used for tasks within an Apache HDFS (Hadoop Distributed File System). Cost effective, no hardware or software to purchase and fully integrates with intelligence business tools from trusted partners.
- **Apache Storm for HDInsight –** distributed open-source, fault-tolerant, event-processing solution for large streams of fast data. Easy, cost-effective, no hardware or software to buy or configure, configuration tools of your choice and fully integrated with Visual Studio.
- **R Server for HDInsight –** R Server is a combination of R analytics software (enterprise-scale) and the power of Apache Spark and Hadoop. Train accurate models to provide better predictions, working with open-source R-language.
- **Data Catalog –** a metadata catalog that makes it easy to discover data assets. A managed service, it allows you to register, discover, enrich, understand and consume data sources, working with the data tool you choose. Use the data in the tools you want it in and gain more value from it – less time looking for data = more time using it.
- **Azure Data Lake Storage –** a scalable, cost-effective solution for big data analytics, combining economy and scale with the power from a high-performance file system. Extends Blob Storage capabilities; store the data once and access it via existing file system interfaces and Blob storage with no changes to programming.
- **Azure Data Explorer –** a fast and easy service for indexing and querying large amounts of data to build near real-time solutions for analytics. Identify patterns, trends and anomalies in any type of data, structured, unstructured or semi-structured.

Compute

- **Virtual Machines –** Azure Virtual Machine has support for Windows Server, Linux, SQL Server, IBM, SAP and Oracle and provides virtualization for all kinds of computing solutions, including developing, testing and running applications and data center extension. It takes just seconds to provision virtual machines with the freedom and flexibility of open-source software configured to your requirements.
- **App Service –** create and deploy cloud apps – mobile, web and API, on any platforms. Fully meet all compliance, scalability, performance and security requirements using a managed platform for infrastructure maintenance.
- **Functions –** use serverless functions to build apps, scaling as needed and on demand. Use the programming language you want and forget about managing infrastructure; take advantage of a fully managed platform with high security and availability.
- **Batch –** Azure Batch provides the power needed for all kinds of batch processing without investing any capital. Scale to thousands of VMs, use Windows or Linux for running jobs, auto scale queued work and pay only for what you use.
- **Container Instances –** run workloads in Container Instances and focus less on infrastructure management and more on development and building applications. Containers can be deployed to the cloud fast with just one command and additional compute may be provisioned when needed for demanding workloads.
- **Azure Batch AI –** experiment and train AI and deep learning models at scale and in parallel. Take advantage of managed infrastructure and keep your costs down with low priority VMs, and automatic scaling. Use any library or framework and deploy containers from Azure Container Registry or from Docker Hub.
- **Service Fabric –** build distributed apps that are scalable and always-on. Simplify the development of microservices and management of application lifecycle, use a Data-aware platform for high-throughput, low-latency workloads and run whatever you want – your choice of models and languages.
- **Virtual Machine Scale Sets –** manage thousands of Windows and Linux machines and scale them in minutes. Take advantage of auto-scaling and integrated load balancing, attach extra data disks if needed and deploy VMS and updates at scale
- **AKS – Azure Kubernetes Service -** AKS makes deploying, managing, and operating Kubernetes easy. Use Azure CLI and Azure Portal to provision clusters, set automated scaling and upgrades to maintain clusters and get full visibility into your Kubernetes environment. AKS is open source Kubernetes so you can take advantage of the services and tools offered in the Kubernetes ecosystem.
- **Cloud Services –** create and deploy scalable, highly available APIs and cloud applications. Focus your attention on the apps, not the hardware and take advantage of built-in support for Node.js, Java, Python, PHP, Ruby and .NET. Save money by autoscaling on demand, deploy up to thousands of instances

almost instantly and take advantage of built-in monitoring, health and load-balancing.

- **Web Apps –** create mission-critical web apps that scale with you and deploy them quickly on Linux or Windows. Enjoy continuous deployment with GitHub DevOps, Team Foundation Server and Git.
- **Mobile Apps –** build the backend and host it for any mobile app, integrate Azure AD for single sign-on and benefit from autoscaling with support for millions of mobile devices. Your apps can sync and work offline and you can add integration with social media sites.
- **API Apps –** build API apps and consume them in the cloud, using the language you choose. Security support comes vis OAuth, Azure Active Directory and single sign-on and you can bring in APIs already in existence written in Python, PHP, .NET, Java and Node.js.
- **Linux Virtual Machines –** provision and run Azure-endorsed Linux VM distributions, including Ubuntu, Red Hat, Debian, OpenSUSE and more. In Azure Marketplace there are preconfigured solutions from leading VM compatible providers, including Oracle and Canonical, all easy to deploy and with the Azure SLA backing.
- **SQL Server on Virtual Machines -** Migrate SQL Server workloads over to the cloud easily and works with any version on any size of VM on Linux or Windows. Use VMs tuned for high performance, bring your own licenses or pay by the minute.
- **SAP HANA on Azure Large Instances –** run and deploy SAP solutions and products on a scalable, secure cloud platform. Take advantage of built-in security, a comprehensive compliance portfolio, SLAs at enterprise grade and full, industry-leading support.
- **Azure CycleCloud –** manage HPC workloads using a scheduler of your choice; deploy full clusters, compute VMS, scheduler and other resources, manage workflows and data and provide admins with control over access. Autoscaling and reference architecture built-in to take care of a huge range of industries and HPC workloads.

Containers

- **App Service –** build and deploy enterprise-grade mobile, web and API apps, scaling as needed. Meet security, performance, scalability, and compliance requirements using a managed platform for infrastructure maintenance.
- **Batch –** scale up to thousands of VMs, cloud-enable HPC and batch apps using Windows or Linux for running jobs. Queued jobs can be auto-scaled and you pay only for what you use, no capital investment needed.
- **Container Registry –** store container images and manage them across all Azure deployments. The configuration of apps isolated from the hosting environment configuration is done by your DevOps team.
- **Container Instances –** run containers on Azure with no need to manage servers or any other infrastructure. Focus on designing and building your apps instead, and gain the security that goes with VMs for all your container workloads.
- **Service Fabric –** develop micro-services and simplify the management of application lifecycles. Scale and orchestrate microservices and containers on a data-aware platform for all workloads with a high throughput and low latency. Use your choice of language and programming model and run on-site, in Azure or in other clouds.
- **AKS – Azure Kubernetes Service** – makes deployment, management and operation of Kubernetes very easy. Provision clusters, automate upgrades and scaling and gain visibility into your entire Kubernetes environment. Use all the tools and services from the Kubernetes ecosystem with AKS.
- **Web Apps –** create web apps that scale on demand and deploy on Linux or Windows systems. Benefit from continuous deployment with GitHub DevOps, Team Foundation Server and Git.
- **Mobile Apps –** build mobile backends and host them for any app, get single sign-on with Azure AD and autoscaling that supports millions of devices. Apps can work offline or sync and social media integration can be added.
- **API Apps –** build and consume API apps in the cloud in the language you prefer. Azure AD, OAuth and single sign-on provide security and existing APIs written in Python, PHP, .NET, Java and Node.js can be brought in.
- **Web Apps for Containers –** deploy containerized apps that scale as you need them to. A managed platform takes care of infrastructure maintenance and load-balancing and autoscaling are built-in.

Databases

- **Azure SQL Database –** a managed relational AQL database that provides compatibility with multiple SQL Server engines, allowing you to migrate your SQL database with the minimum of fuss. App development can be accelerated, maintenance simplified and all using the tools you already know.
- **Azure Cosmos DB –** a globally distributed database with horizontal scaling. Distribute across any region with transparent scaling and data replication, benefit from elastic scaling and paying as you go. Native support included for OSS and NoSQL APIs.
- **SQL Database –** unlock brand new insights using a managed cloud data warehouse combining ultra-fast query performance and top-level data security. Benefit from unlimited storage, auditing built-in, threat detection and automated administration and seamless integration with other Azure services.
- **Data Factory –** a hybrid data integration service that helps you create, schedule data integrations. Work with your data wherever it is – on-site, in Azure or any other cloud platform.
- **Azure Cache for Redis –** managed service for powering applications with low-latency, high-throughput data access. Reliability, flexible scale, industry-standard security and open source compatibility for data structures all built-in.
- **SQL Server Stretch Database –** stretch cold and warm data dynamically from SQL Server 2016 to Azure. Longer data retention times and stretching data result in lower spending and more scaling.
- **SQL Server on Virtual Machines –** set up a virtual machine, back your SQL instance up and restore it to Azure very easily, leaving data center management behind. Migrate on-site SQL servers to the cloud, on a PAYG basis or bring your own license.
- **Table Storage –** store huge amounts (petabytes) of semi-structured data and reduce storage costs. Scale up as needed without sharding your dataset and make use of geo-redundant storage for replication. Made for enterprise, but designed for developers.
- **Azure Database for Postgre SQL –** managed community PostgreSQL DaaS – Database as a Service. Lift and shift easily, using your own frameworks and languages and take advantage of high availability and fast scaling, along with compliance and security.
- **Azure Database for MariaDB –** deploy applications easily to the cloud with your own frameworks and languages while maintaining business continuity and benefitting from elastic scaling and high availability. Full security and compliance built-in and flexible pricing.
- **Azure Database for MySQL –** managed MySQL DaaS, helping you move to the cloud using your own frameworks and languages. Top-level security, full compliance, dynamic scaling, high availability are some of the benefits, along with flexible pricing.

- **Azure Database Migration Service –** simplified database cloud migration with one comprehensive service. A seamless solution, no special skills needed in a fully guided process.

Developer Tools

- **Visual Studio –** a flexible and powerful tool for developing apps for any platform. Create quality code, and navigate it efficiently; find bugs and fix them and publish easily to Azure App Service or deploy automatically using a CI/CD pipeline
- **Visual Studio Code –** a light yet powerful code editor that allows for easy navigation of large code bases, easy debugging and auto importing for TypeScript and JavaScript. Locally run and test event-driven apps and deploy when ready.
- **SDKs –** download SDK's specific to language and the tools you need for your platform. Use command line scripts to manage Azure apps and services and migrate your resources easily onto Azure.
- **Azure DevOps –** use a complete set of modern development services for smarter planning, better collaboration and faster shipping. Use all the services on offer or choose the ones you need for your workflow.
- **CLIs –** build scalable services and apps for any platform, deploy and diagnose using command line tools. Use PowerShell cmdlets for creating, testing and deploying services and solutions, Azure CLI as a light command line tool on multiple platforms and PowerShell for Visual Studio for editing, running and debugging scripts in a local environment.
- **Azure Pipelines –** continuous building, testing and deployment to any cloud or platform; Pipelines helps you to automate builds and deployments, giving you more time to spend on being creative. Multiple languages supported and parallel running on multiple platforms.
- **Azure Lab Services –** set labs up for trials, classrooms, development and testing and multiple other scenarios, provisioning each one with the right settings and software. Experiment, create, innovate and keep your costs down on both Linux and Windows builds.
- **Azure DevTest Labs –** quickly and easily create environments with artifacts and reusable templates. Test and development environments can be quickly provisioned, costs kept down and you can save even more by setting automated shutdowns.
- **Developer Tool Integrations –** use development tools you are already familiar with, all integrated into Azure. Deploy from Maven, IntelliJ and Eclipse straight into Azure, use Scala or Java for creating Apache Spark Linux clusters and manage Azure services right from the IDE.

DevOps

- **Azure DevOps –** DevOps services to help teams share code, track their work and ship their software. Choose which services you want to use or use them all, whatever your business requirements are or mix and match with apps from the Extensions Marketplace.
- **Azure Pipelines –** continuous building, testing and deploying, any platform, any cloud. Run your apps in parallel on Windows, Mac OS and Linux and build images, pushing them to container registries like Azure Container Registry.
- **Azure Boards –** track your work using Kanban boards, team dashboards, custom reports and backlogs at every stage of development. Combine flexible tracking with sprint planning, use scrum boards already builtoin and get new insights into your project.
- **Azure Repos –** take advantage of unlimited Git repo hosting and full TFVC support. Connect and push code securely to your Git repos from any editor Git client of IDE and choose from extensions and validations from the Marketplace or build your own.
- **Azure Artifacts –** add integrated package management to CI/CD pipelines with one click. Easily create and share NuGet, npm, and Maven packages with teams.
- **Azure Test Plans –** execute texts and capture rich data, execute texts across web apps and desktop and benefit from end-to-end quality and traceability. Ship apps with confidence using this combined exploratory and manual testing toolkit.
- **Azure DevTest Labs –** provision your test and development environments quickly, minimize waste and save costs by setting automated shutdowns. Build with reusable templates for Linux and Windows.
- **DevOps Tool Integrations –** stick with the DevOps tools you know and love and benefit from example architectures and clear guidance. Deploy to Azure services, spend less time on integration and more on getting apps to market quicker.

Identity

- **Azure Active Directory –** benefit from security and access control, identity management and intelligence-driven policies to keep your resources secure. Azure AD is integrated into several Azure services, centralizing access management and identity management to enable productivity, management and deep security across infrastructure, apps, data and devices. Built to work anywhere.
- **Azure Information Protection –** protect sensitive information shared externally to your organization, in email and in documents. Benefit from enhanced data protection, regardless of where it is and who it gets shared with.

- **Azure Active Directory Domain Services –** join VMs to a domain without deploying domain controllers. Use corporate Azure AD credentials to sign into VPN GateVMs and Group Policy for secure VM administration. Migrate on-site apps easily, deploy quickly and pay as you go.
- **Azure Active Directory B2C –** a cloud identity service that lets you connect to customers who put your brand ahead of others. Protect identities on a platform that is scalable, reliable, and highly available. Use built-in policies or create your own and allow users to sign in using existing social media or email credentials.

Integration

- **Event Grid –** simplify event-based apps with a service that manages event routing from anywhere to anywhere. Highly available, dynamic scaling and consistent performance allow you to focus on app logic and not on infrastructure.
- **Logic Apps –** visually create workflows and business processes and integrate with both enterprise applications and SaaS. Unlock more value from your applications, both in the cloud and on-site and automate your business processes.
- **API Management –** publish your APIS to internal and external customers, creating modern, consistent API gateways for backend services, regardless of where they are hosted. Secure then, protect them and gain better insights; automate developer onboarding and scale to get your API program off the ground.
- **Service Bus –** build elastic, reliable cloud apps with messaging and protect your apps from any traffic spikes. Decouple apps, connect on-site systems to the cloud and distribute messages to several backend systems.

Internet of Things (IoT)

- **IoT Hub -** connect together billions of IoT assets, monitor and manage them in complete security to develop a range of IoT Applications. Hub is open source, flexible with full support for multiple protocols and open source SDKs
- **IoT Edge –** managed service that assists with the deployment and running of Azure services, AI, and custom logic directly on IoT devices, regardless of platform. Managed service that is fully secure, and scales with you, offline and in the cloud
- **IoT Central –** get the simplicity of SaaS for IoT without needing any cloud expertise. A managed IoT SaaS solution that simplifies connection, monitoring and management of IoT assets, allowing you to speed up time to market while focusing on customers

- **IoT Solution Accelerators –** make use of templates to come up with customizable solutions for many common IoT scenarios; improve the efficiency of your processes, deliver more effective customer experiences and generate new streams of revenue.
- **Azure Sphere –** create MCU devices, secured and connected on a secure platform, with turnkey cloud security service. End-to-end IoT security provides immediate response to emerging threats, leaving you free to focus on your customers and apps.
- **Time Series Insights –** managed analytics, visualization and storage service for time-series cloud data. Get more value, better insights, find hidden trends and interact with sensor data for easier solution validation. No code needed, no new language to learn.
- **Azure Maps –** create apps with maps, routing, search and traffic integrated. Use the Render API or JavaScript Map Control API for maps that dynamically update and deploy large-scale solutions and applications with advanced geospatial analytics and batch services.
- **Functions –** build apps using serverless functions that scale on demand. Use your favorite programming language, forget about infrastructure and pay only for what you use
- **Event Grid –** massive-scale event-driven apps by connecting events from anywhere to serverless logic. High availability service to manage routing from any source to any destinations; focus on app logic and not on infrastructure
- **Window 10 Core IoT Services –** take advantage of 10 years of support, reliability and security. Control your updates with Device Update Center and use Device Health Attestation to ensure the safety of your devices. Combine with management systems like Azure IoT Device Management to generate reports and take timely action.
- **Machine Learning Service –** build AI models, train them fast and deploy to the edge or cloud using open source technology such as Jupyter, PyTorch, and TensorFlow. Scale as needed, speed data science up and track your AI experiments, managing and deploying using integrated CI/CD.
- **Machine Learning Studio –** build, deploy and manage your predictive analytics solutions easily and quickly. A browser-based environment with visual drag-andodrop authoring, no coding needed.
- **Stream Analytics –** develop real-time analytics and run on any IoT or non-IoT data stream with a SQL-like language. Customize code for more advanced scenarios, process on-demand, scale immediately and pay per job.
- **Logic Apps –** easily automate data access and use across multiple clouds with no code writing necessary. Integrate easily with enterprise and SaaS apps, get more value from apps, automate business processes and enhance your solutions for integration with the cloud.
- **Notification Hubs –** push notifications sent from any backend to any platform, in-cloud or on-site. One API call to millions of devices, tailor notifications to customers, location and language and scale on demand.

- **Azure Cosmos DB –** multi-model distributed database with transparent scaling and replication of data to where your users are. Elastic scaling, PAYG, and native support for OSS and NoSQL APIs all backed by comprehensive SLAs.
- **API Management –** publish APIs to internal and external customers, creating modern, consistent API gateways for backends hosted anywhere. Secure your APIs, protect them from being abused and gain intelligent insights.
- **Azure Digital Twins –** model interactions and relationships between devices, places and people to build next-gen IoT solutions. Build virtual world representations using extensible and predefined twin models to come up with solutions that are industry-specific.

Management and Governance

- **Azure Backup -** reduce time to restore data and increase reliability; full support built-in for VMs in the cloud and on-site. Cost effective as no extra infrastructure is required and several layers of authentication keep your data safe
- **Azure Site Recovery –** built-in disaster recovery helps with business continuity during IT outage. Cost effective, easy to deploy, reliable and secure, whether the outage is planned or unplanned.
- **Azure Advisor –** optimize Azure resources over four areas – performance, high-availability, security, cost – with all recommendations in one central place. Recommendations based on business impact and category; scan resources at no extra cost and get recommendations based on your usage and configuration
- **Scheduler –** run jobs on schedules – simple or complex – now, in the future or on a recurring scales. Reliable, even through failures; Azure Storage queues can help with offline or long-running jobs, and web service endpoints can be invoked
- **Automation –** automate time-consuming frequent cloud management tasks and monitor update compliance across cloud, on-site and Azure platforms for Linux and Windows. Simplify your cloud configuration management and reduce errors, boost efficiency and focus on bringing value.
- **Traffic Manager –** route traffic coming in for better availability and higher performance; increase the responsiveness of your apps, combine cloud and on-site systems and use traffic patterns and volumes to get better insights.
- **Azure Monitor –** take advantage of machine learning and advanced analytics to monitor the performance of your applications, identify issues and respond to alert. Gain full visibility into your network, infrastructure, and applications
- **Network Watcher –** monitor networks and diagnose issues, set alerts to trigger packet capture, and get packet-level performance information. Use flow logs to understand your network traffic and diagnose VPN connection issues.
- **Azure Service Health –** get notifications when Azure services issues occur and understand the impact. Prepare for planned changes and maintenance that may affect your resources and their availability

- **Microsoft Azure Portal –** use one unified console to build your Azure applications, manage them and keep an eye on them. Control access management, and combine Microsoft and Partner services to create your applications. Full visibility, integrated support and automatically calculated charges and forecasts.
- **Azure Resource Manager –** manage app resources easily; use one template to define your app infrastructure and dependencies and deploy consistently.
- **Cloud Shell –** use a browser-based shell to streamline administration. Choose the shell experience that suits you and benefit from built-in CLI tools and support for most major programming languages.
- **Azure Mobile App –** monitor status and health of all your Azure resources, diagnose and fix issues. Use commands to manage your resources and stay connected anywhere, anytime.
- **Azure Policy –** easily implement corporate standards and governance simply and at scale. Policy and audit compliance can be monitored continually and enforced; build your own policies or apply ready-made ones from Microsoft
- **Cost Management –** optimize your cloud spending, maximize potential. Manage with accuracy and transparency, use monitoring tools for costs and track usage of resources. Manage costs across all clouds and make your cloud more efficient
- **Azure Managed Applications –** offer turnkey solutions through the service catalog or Marketplace; build complete Azure solutions and manage them, attach support and services and develop solutions that comply with standards for all organizations.
- **Azure Migrate –** easy migration of on-site VMs to the cloud. The built-in guidance makes the process easy, with recommendations for tools. Effective VM grouping via dependencies and optimized cloud resources based on use.
- **Azure Blueprints –** deploy resource templates, access control and policies, speed up deployment to production of compliant applications and limit shared infrastructure access. Quickly create repeatable governed environments.

Media

- **Media Services –** use full HD video encoding and streaming to get your video and audio to customers. Use video AI to get better metadata, improve distribution, accessibility and scalability, with full protection for all content.
- **Encoding –** encode in multiple formats, batch process at scale, and use high-performance encoding. Support for web, broadcast and professional workflow, generate clips, thumbnail, stitching and overlay, all on a secure platform.
- **Live and On-Demand Streaming –** deliver content to all devices, using Just-in-Time AES encryption, PlayReady DRM technology and Just-In-Time packaging to Smooth Streaming, MPEG-DASH and HLS. Handle all sizes of

audience, integrate directly with CND and benefit from DVR workflow capabilities.

- **Azure Media Player –** one layer for all playback requirements; chooses the best format for playback automatically, supports popular devices and screens and integrates easily into app and web solutions. Use JavaScript API deployment and benefit from automatic fallback for Silverlight and Flash.
- **Content Protection –** deliver content from the cloud securely using Fairplay, Widevine, PlayReady and AES. Dynamic encryption and simplified key management, integration with Azure AD and configure your own protection rules.
- **Media Analytics –** gain better insights from videos using vision and speech services. Create stale, smooth time lapses from FP videos, detect motion in stationery videos, detect faces in videos, detect emotions and create video summaries
- **Video Indexer –** unlock intelligent video insights using Video Indexer without writing any code. Use the programming language of your choice, embed widgets, and extract insights using AI

Migration

- **Azure Site Recovery –** with built-in site recovery, your business keeps running through planned and unplanned outages. Benefit from cost-effectiveness, easy deployment and total dependability. Part of Disaster Recovery as a Service.
- **Cost Management –** monitor your cloud spending, optimize it while maximizing potential on the cloud. Implement governance policies, to increase accountability and manage costs better, track usage of resources, and benefit from continuous optimization of costs.
- **Azure Database Migration Service –** simplify migration of onoste databases to the cloud using a simple migration process. Migrate from multiple sources to your target cloud database following the guided process with no need for special skills or tools.
- **Azure Migrate –** discover on-site VMs and dependencies, migrate to the cloud using provided guidance and optimize cloud resources based on use. Get recommendations for migration tools, and group VMs for migration based on dependencies.
- **Data Box –** secure appliance to move in-flight or stored data to Azure. Offline data boxes can move data when you can't use busy networks and online boxes will transfer via the network.

Mobile

- **App Service –** build enterprise-grade API, mobile and web apps for any platform; deploy and scale easily. Meeting strict requirements for performance, security, scalability, and compliance on a managed platform that maintains the infrastructure
- **Azure Map –** build maps, search and routing into apps using geospatial APIs that will integrate easily with other Azure services. Add time zones, IP lookup and tailor content and services to users based on location.
- **Notification Hubs –** push notification engine to send notifications to millions of devices, regardless of platform. Notifications can be customized to an audience or customer cross-platform and with the minimum amount of code.
- **Web Apps –** create mission-critical apps and deploy at scale. Use your favorite language on a managed platform or use readymade templates for one-click deployment. Increase productivity from developers and ship ap updates much quicker, scaling on demand.
- **Mobile Apps –** build mobile app backends, cross-platform and native. App data can be stored in the cloud or on-site, your customers can be authenticated using Azure AD, you can connect securely to on-site resources and cross-platform frameworks. Build responsive apps using data sync offline and access data securely from global on-site data centers
- **API Apps –** build cloud APIs and consume them easily. Benefit from connection your API app and version control system and deploy commits, making code changes simple. Secure your apps using Azure AD, OAuth or single sign-on with no need for code change. Connect to local or corporate network with enterprise-grade security
- **Azure Mobile App –** connect to your resources in Azure anytime; monitor the status and health of your resources, diagnose issues and fix them and manage resources using commands.
- **Visual Studio App Center –** ship apps on any platform fast and with confidence through automation of app lifecycles. Connect your repository, build apps in the cloud in minutes, test on real devices, distribute to app stores and tested and monitor app usage with analytics and crash data.
- **Xamarin –** create mobile apps powered by the cloud fast and scale globally to millions of customers. Add push notifications, authentication and offline data sync. Scalable storage, integrated tools, mobile SDKs and easy integration with mobile DevOps processes and systems are just some of the benefits.
- **Web App For Containers –** deploy containerized applications and run them on Linux or Windows easily. Managed platform takes care of infrastructure maintenance, load-balancing and auto-scaling built-in and easily streamline CI/CD using GitHub, Azure Container Registry and Docker Hub.

Networking

- **Content Delivery Network –** benefit from a reliable, secure content delivery service with a global reach and hugely scalable. Easy to set up, pay as you go and enjoy full integration into your Azure services.
- **ExpressRoute –** enjoy a fast private connection to Azure with improved speed and reliability and low latency. Supports bandwidths up to 100 Gbps, connect to WAN and to your on-site network through Microsoft's global network.
- **Azure DNS –** let Azure host your DNS domain and manage DNS records with the same credentials as all your other Azure services. Benefit from app acceleration, Microsoft's global network of name servers and no waiting for new records to be added.
- **Virtual Network –** easily provision hybrid infrastructures controlled by you, bring your own DNS servers and IP addresses and use ExpressRoute or an IPsec VPN to secure your connections. Benefit from a secure isolated environment for your apps and get control over the traffic between subnets.
- **Traffic Manager –** route incoming traffic to get better availability and performance. Increase the responsiveness of your apps, combine your cloud and on-site systems and take advantage of valuable insights.
- **Load Balancer –** scale applications instantly, load-balance your private and internet network traffic and use health checks to improve the reliability of your apps. Flexible NAT rules provide full security and full integration into cloud services and VMs.
- **VPN Gateway –** easily connect your infrastructure to the cloud using site to site, industry standard IPsec VPNs and get point to site VPN access regardless of where you are. Highly available, easy management, secure connections and 99.9% uptime SLA for any VPN gateway.
- **Application Gateway –** build scalable, secure, available frontends with 99.95% uptime SLA for sharing of cross-session states. Use Azure APIs for management, benefit from support for both private and public websites and a web application firewall.
- **Azure DDoS Protection –** ensure your applications are protected from DDoS attacks and benefit from a Gateway Web Application Firewall, full integration with Azure Monitor for insights and analytics and full protection from what a DDoS attack can cost your organization.
- **Network Watcher –** complete solution for monitoring and diagnosing network performance. Use flow logs to gain insights into your network, diagnose network issues without having to log into your VMs and diagnose issues with VPN connections
- **Azure Firewall –** Firewall as a Service with high availability, no maintenance and no restrictions on cloud scalability. Integrated with Azure Monitor for analytics and logging, hybrid connectivity support right through deployment from behind ExpressRoute and VPN Gateways and support for SNAT and DNAT

- **Virtual WAN –** optimize branch to branch connectivity and automate it through Azure. Benefit from optimized routing and unified management for networks and policy.
- **Azure Front Door Service –** delivery point for microservice-based, global web apps. Benefit from application firewall and protection from DDoS attacks, application acceleration and SSL offload at the edge and global HTTP load balancing.

Security

- **Azure Active Directory – a** complete solution to provide access control, security, identity management and intelligence-driven policies to secure your resources. Benefit from Azure AD being integrated into several other Azure services, central identity and access management to ensure deep infrastructure security, along with security for devices and data.
- **Azure Information Protection –** keep sensitive information protected when shared with external sources. Benefit from secured information in documents and emails, and far better data protection, no matter where it is and who you share it with
- **Azure Active Directory Domain Services –** easily join VMs to domains without the need for domain controllers. Sign into your VMS and Group Policy using corporate Active Directory credentials to ensure VM administration is secure and migrate you on-site apps, deploy quick and pay for what you use.
- **Key Vault –** keep your keys and passwords fully secured and have full control over them. Create encryption keys and import them very quickly, reduce latency with global redundancy and cloud scale and automate tasks for SSL/TLS certificates.
- **Security Center –** unify your security management and ensure threat protection is enabled across your hybrid cloud workloads. Ensure security compliance by applying policies, find vulnerabilities and fix them before they are exploited and block malicious activity with application and access controls.
- **VPN Gateway –** use site to site IPsec VPNs to connect infrastructure to cloud and, no matter where you are, benefit from point to site VPN access. Easy to manage, highly available, secure and VPN Gateways benefit from 99.9 SLA.
- **Application Gateway –** build frontends that are scalable secure and highly available with a 99.95 uptime SLA for cross-session state sharing. Benefit from APIs for management, support for private and public websites and a web app firewall.
- **Azure DDoS Protection –** protect your apps from DDoS attacks and use a Gateway web app firewall to protect your apps. Benefit from Azure Monitor integration, insights, analytics and protect against the costs of a DDoS attack.
- **Azure Advanced Threat Protection –** detect on-site and in-cloud attacks, identify suspicious activity from users and devices and protect credentials and

identities stored in Azure AD. See clear information about attacks, and monitor multiple points of entry with Windows Defender Advanced Threat Protection integration.

Storage

- **Storage –** cloud storage on a highly available, durable scale. Benefit from massive scalability, flexibility and lower costs. Take the heavy lifting away from the data center management and pay for what you use.
- **Azure Backup -** take less time and get more reliability to restore your data. Built-in support for on-site and in-cloud VMS, no additional infrastructure requires and multiple authentication layers for security.
- **StorSimple –** hybrid cloud storage solution that costs less. Consolidate your storage infrastructure, automate management of data and get rapid and reliable disaster recovery. Pay only for what you use.
- **Azure Data Lake Storage –** cost-effective big data analytics solution that combines scale and economy with HPFS power. Extends the capabilities of Blob Storage – store once, access using existing Blob Storage and file system interfaces with no extra coding needed.
- **Blob Storage –** combining huge scalability with exabytes of storage capacity, Blob Storage can store up to billions of objects in archive hot or cold tiers. Any unstructured data type can be stored easily and more cost-effectively.
- **Disk Storage –** secured, persistent disk options with full support for VMs. Benefit from HDD/SSD durability, availability, security and scalability for all workloads. Choose from Ultra SSD, Premium SSD or Standard SSD storage depending on your workloads and requirements.
- **Queue Storage –** scale your apps as per your traffic. Build applications that are flexible along with separate functions to ensure durability over large workloads. Applications are scalable, rightsized, and elastic.
- **File Storage –** managed file shares accessible through SMB protocol. Mount concurrently by on-site or in-cloud deployments of Linux, Mac or Windows and cache file shares on Windows Servers.
- **Data Box –** secure, rigged appliance that helps move data from premises to the cloud. Choose from online appliances to transfer data through the network or offline to transfer when busy networks can't be used.
- **Avere vFXT for Azure –** gain the ability to run file-based, high-performance workloads in the cloud. Move excess capacity to Azure and leave large datasets where they are for a NAS solution. Protect your infrastructure while easily managing new demands, run SMB and NFS workloads with no latency, scalable as required.
- **Storage Explorer –** manage your storage account content easily; upload, download, manage files, blob files, tables, queues, and Cosmos DB entities.

Benefit from each access to VM disks and work with Azure Resource Manager or a classic storage account.

- **Archive Storage -** cost-effective price point for data rarely accessed. At rest data is encrypted automatically, seamlessly integrate with cool and hot storage tiers and take advantage of full support from trusting data management partners.
- **Azure NetApp Files –** enterprise-grade solution for data management, powered by NetApp. Compliant, secure, hybrid cloud experience with a simple interface

Web

- **App Service –** create cloud apps for mobile and web, deploy and scale quickly on any platform. Use a fully managed platform to maintain infrastructure while you meet scalability, performance, security and compliance requirements.
- **Content Delivery Network –** reliable, secure global content delivery solution. Reduce load times, increase speed responsiveness and save on bandwidth, whether you are a developer or managing apps and websites, encoding media, IoT Endpoints and more.
- **Azure Search –** Search as a Service allows you to add cloud search capabilities to apps or websites, tune results and use AI to gain insights from documents. Managed service that reduces complexity and boosts development speed.
- **Notification Hubs -** send push notifications from any backend to any platform, on-site or in the cloud. Use one API call to reach millions of devices and tailor notifications by location, language and individual customers.
- **API Management –** securely publish your APIs to employees, partners and developers, quickly and at scale. Create modern, persistent API gateways for backend services already in existence, regardless of where they are hosted and keep them secure.
- **Web Apps –** deploy mission critical web apps on both Linux and Windows platforms. Benefit from load-balancing and auto-scaling built-in, high availability, auto-patching and continuous deployment with Team Foundation Server, DevOps, Git and GitHub. Supports Umbraco, Drupal, Joomla!, and WordPress.
- **Mobile Apps –** build mobile app backends with support for native and cross-platform apps built-in. app data can be stored on-site or in the cloud, customers authenticated and push notifications sent.
- **API Apps –** build API apps and consume them in the cloud. Use your favorite language, benefit from security with OAuth, Single Sign-on and Azure AD and bring in your existing APIS with support for multiple programming languages. Integrate with Logic Apps, API Management and other Azure services

- **Web App for Containers –** deploy containerized web apps that are scalable, supported on Windows and Linux. Managed platform takes care of infrastructure maintenance, built-in load balancing and auto-scaling and CI/CD streamlining.
- **Azure SignalR Service –** easily add real-time web functionalities and communications into web apps. Managed service that makes adding functionality simple with no need to worry about scalability, load balancing or anything else. Fully integration capabilities with multiple Azure services.

Conclusion

First, I want to thank you for purchasing my guide and I hope that you are now fully introduced to the Microsoft Cloud. Microsoft Azure is set to be the largest cloud provider in the near future, overtaking Google and AWS fast. This is by no means an in-depth introduction – that would have been a much larger guide – but it does give you a good idea of what Azure is all about and what it can offer your organization.

Azure is full of services and products, offering a complete solution for any organization and Microsoft is doing its best to ensure that the platform provides for any scenario, especially where big data, analytics, AI and machine learning are concerned, not to mention IoT. Getting on board now means joining the biggest and most open source hybrid cloud provider in the world, and the most cost-effective.

With pricing plans to suit everyone, even down to paying as you go, there are huge savings to be made by migrating your business to the cloud, in part or in full.

Once again, thanks for reading my guide and I hope that you found it helpful.