Microsoft

Azure Stack for Your Hybrid Cloud Strategy

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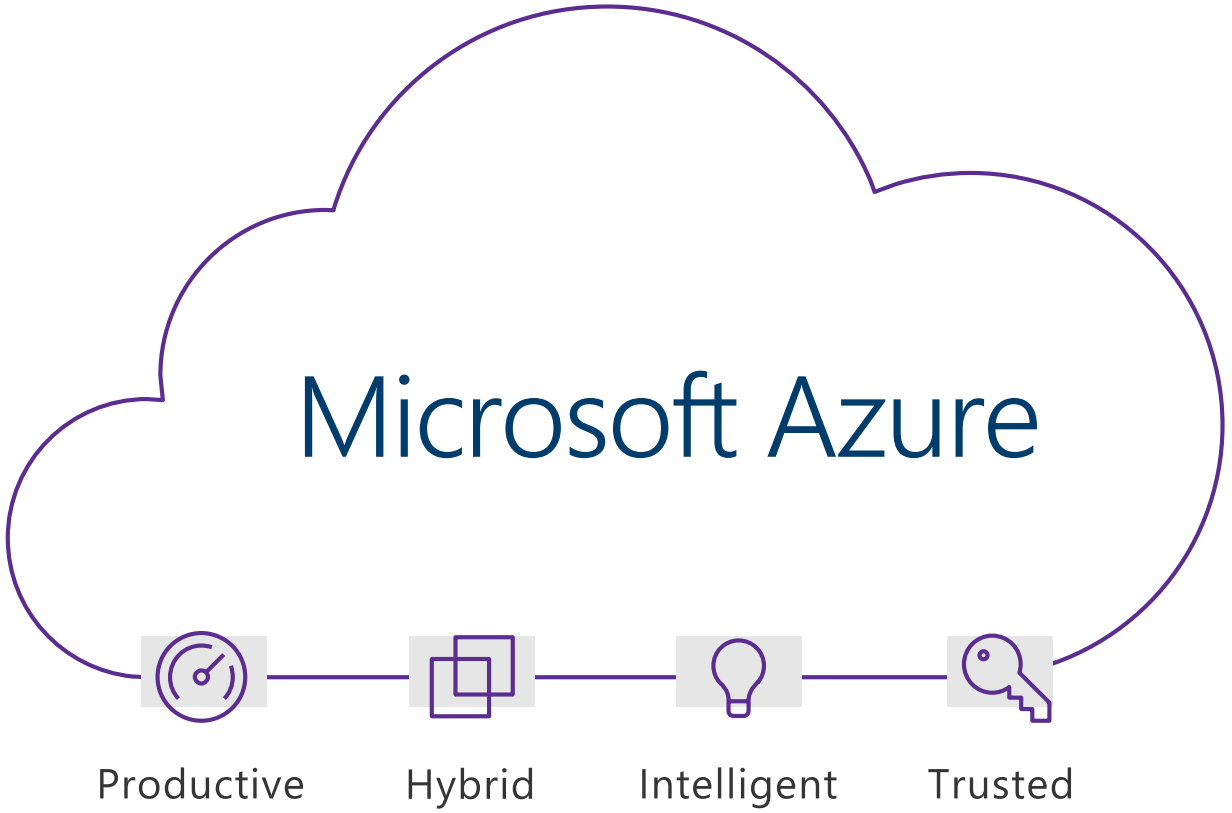
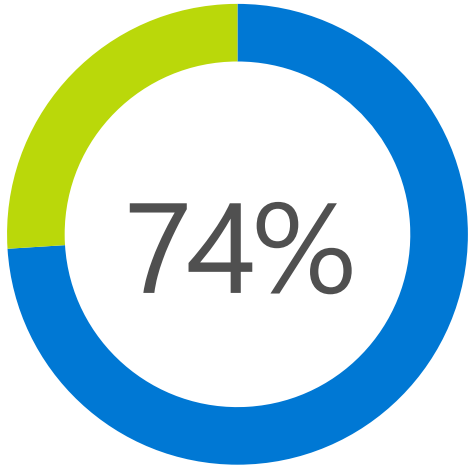
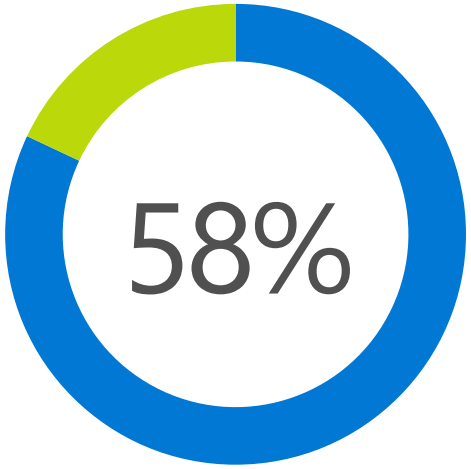
Why Azure Stack ?


Microsoft Azure
Productive
Hybrid
Intelligent
Trusted

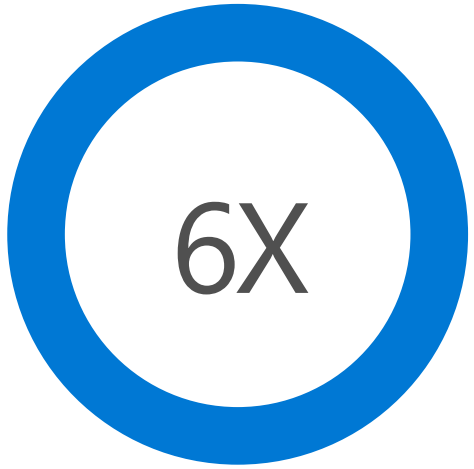
Hybrid Cloud presents great opportunity



ENTERPRISES BELIEVE A HYBRID CLOUD WILL ENABLE BUSINESS GROWTH



ENTERPRISES HAVE A HYBRID CLOUD STRATEGY, UP FROM 55 PERCENT A YEAR AGO

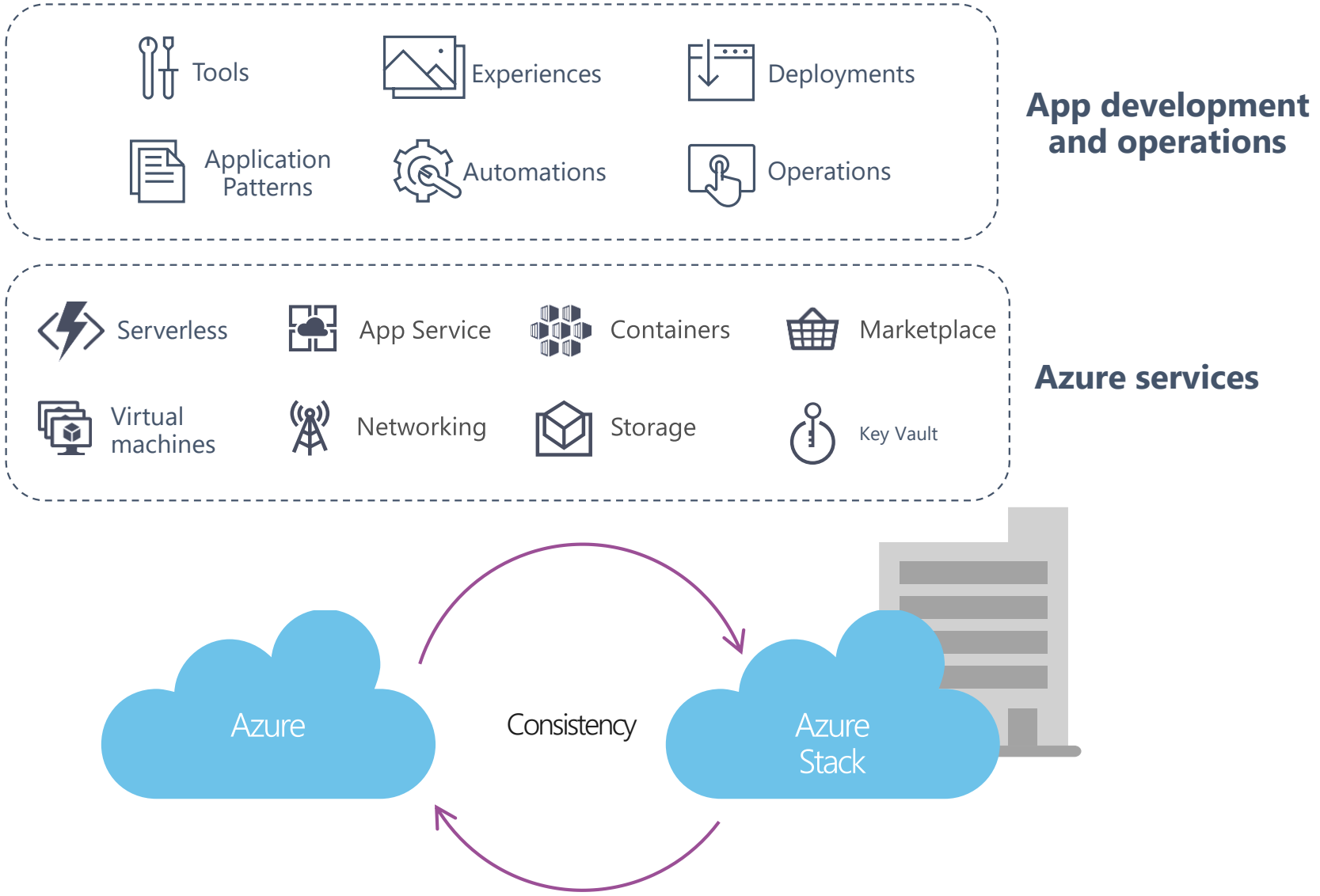


GROWTH OF IT SPENDING ON PUBLIC CLOUD SERVICES IS 6X OF OVERALL IT MARKET

45% organizations will go through service providers

Sources: 1) Avanade Global Study: Hybrid Cloud–From Hype to Reality, 2) RIghtScale 2017 state of the cloud report, 3) IDC Worldwide Semiannual Public Cloud Services Spending Guide 4) tier 451 research

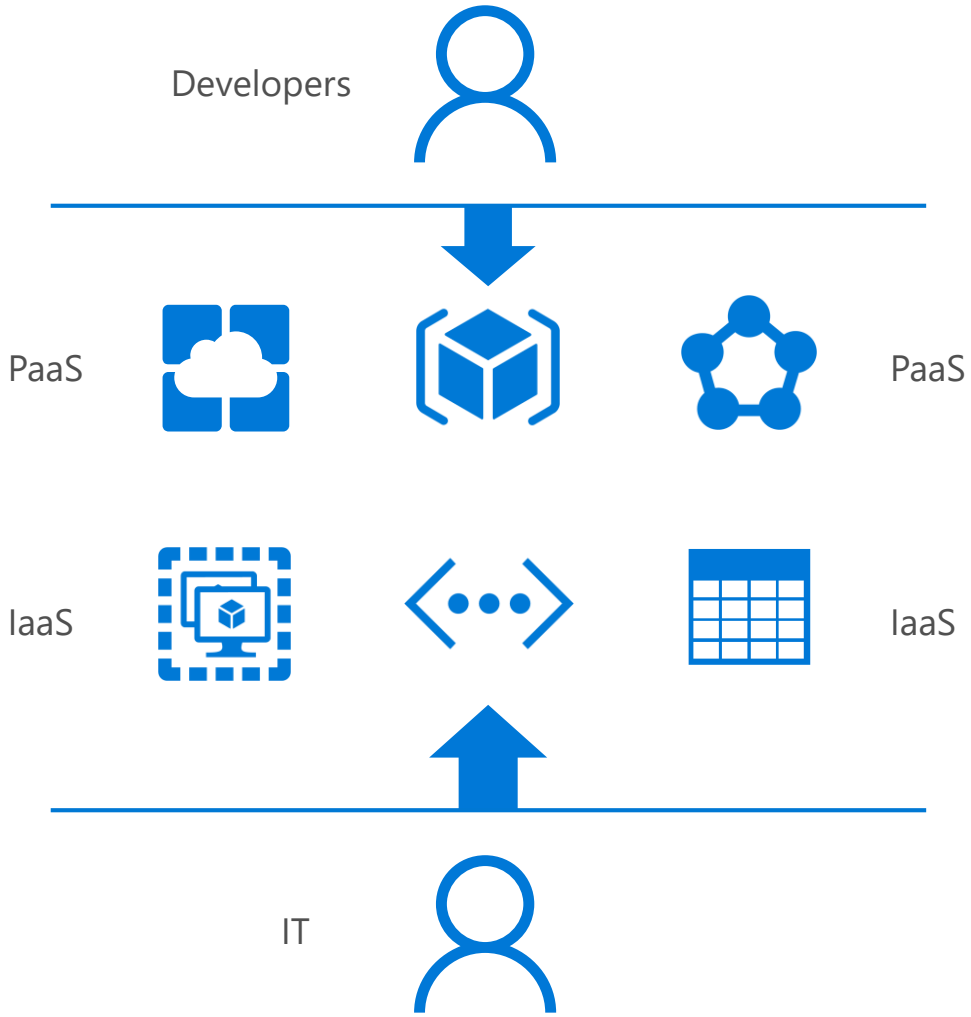
Consistent Cloud Platform



Azure Stack brings services in your datacenter

Adopt hybrid cloud computing on your terms.

Meet business and technical requirements, with the flexibility to choose the right combination of cloud and on-premises deployment models.



End-to-end hybrid cloud infrastructure for your applications

Microsoft Azure

Consistent Server Platforms

Consistent Cloud Platform

On-premises

Windows Server/SQL Server

Azure Stack

Azure and Azure Stack

Truly consistent hybrid cloud platform

Portal | PowerShell | DevOps tools

Azure Resource Manager

Azure IaaS | Azure PaaS
Compute | Network | Storage | App Service | Service Fabric*

Cloud-inspired infrastructure

Microsoft Azure Stack
Private | Hosted

Sealed hosts
Integrated Systems Hardware

Portal | PowerShell | DevOps tools

Azure Resource Manager

IaaS | PaaS

Cloud infrastructure

Microsoft Azure
Public

Sealed hosts
Azure-designed Hardware

Demo

Azure Stack Use Cases

Deploy Azure Stack for:

- Real-time latency requirements
- Connectivity issues
- Local data processing

Use Azure for aggregate analytics and big data modelling

Common application logic across both, connected or disconnected

Edge and disconnected solutions



Develop and deploy global application in Azure

Optionally deploy to Azure Stack to handle customer preferences for regulations:

- Government
- Industry
- Region

No changes to application

Cloud applications that meet every regulation

Apply modern architectures to on-premises apps not yet ready for cloud

- PaaS
- Serverless Computing
- Microservices & Containers

Move to Azure without code changes

Consistent programming model, skills, and processes

Modern applications across cloud and on-premises

Customers

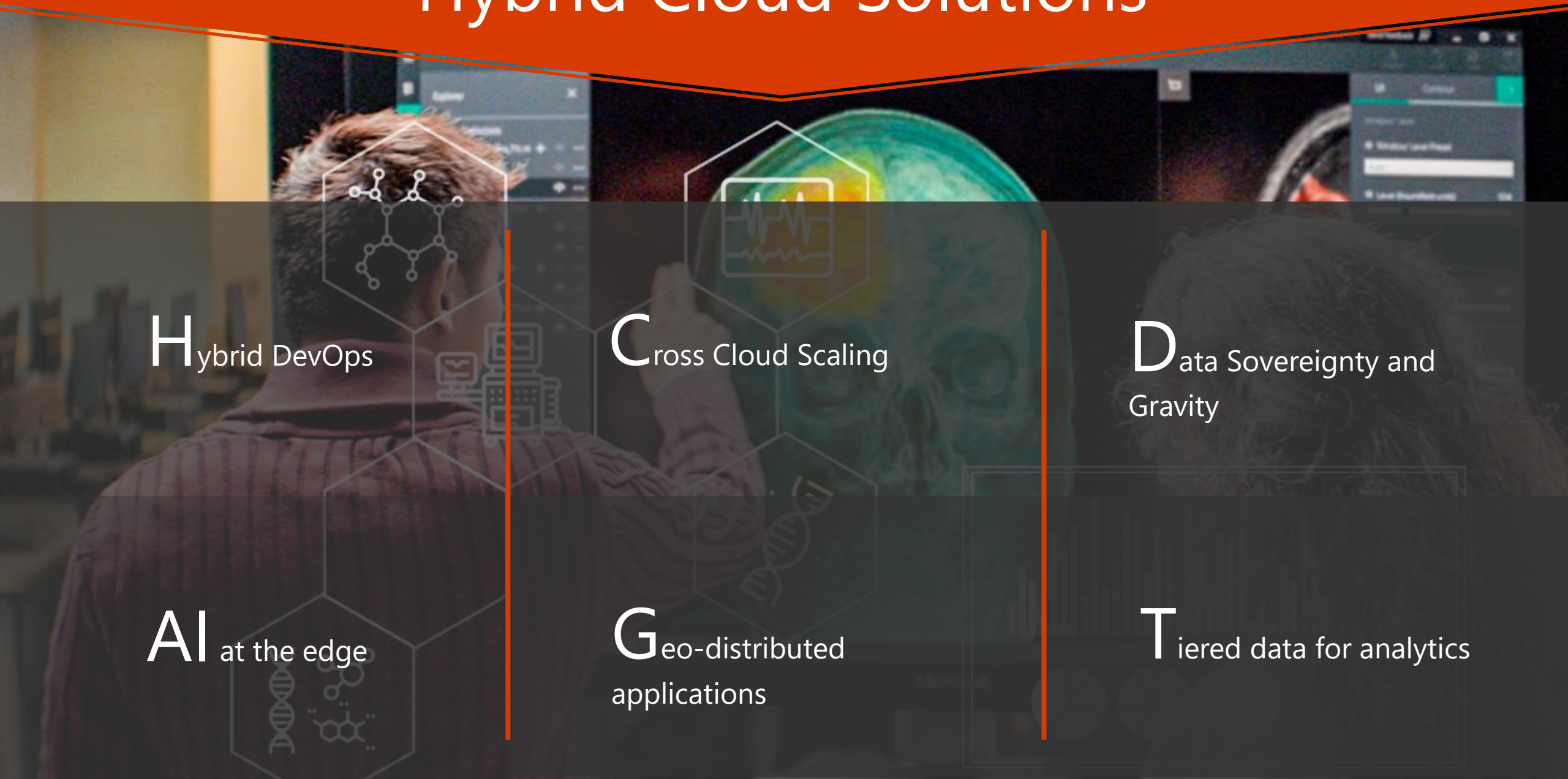
Edge and disconnected solutions

Cloud applications to meet varied regulations

Cloud application model on-premises

Azure Stack & Hybrid Cloud

Hybrid Cloud Solutions



Hybrid DevOps

Cross Cloud Scaling

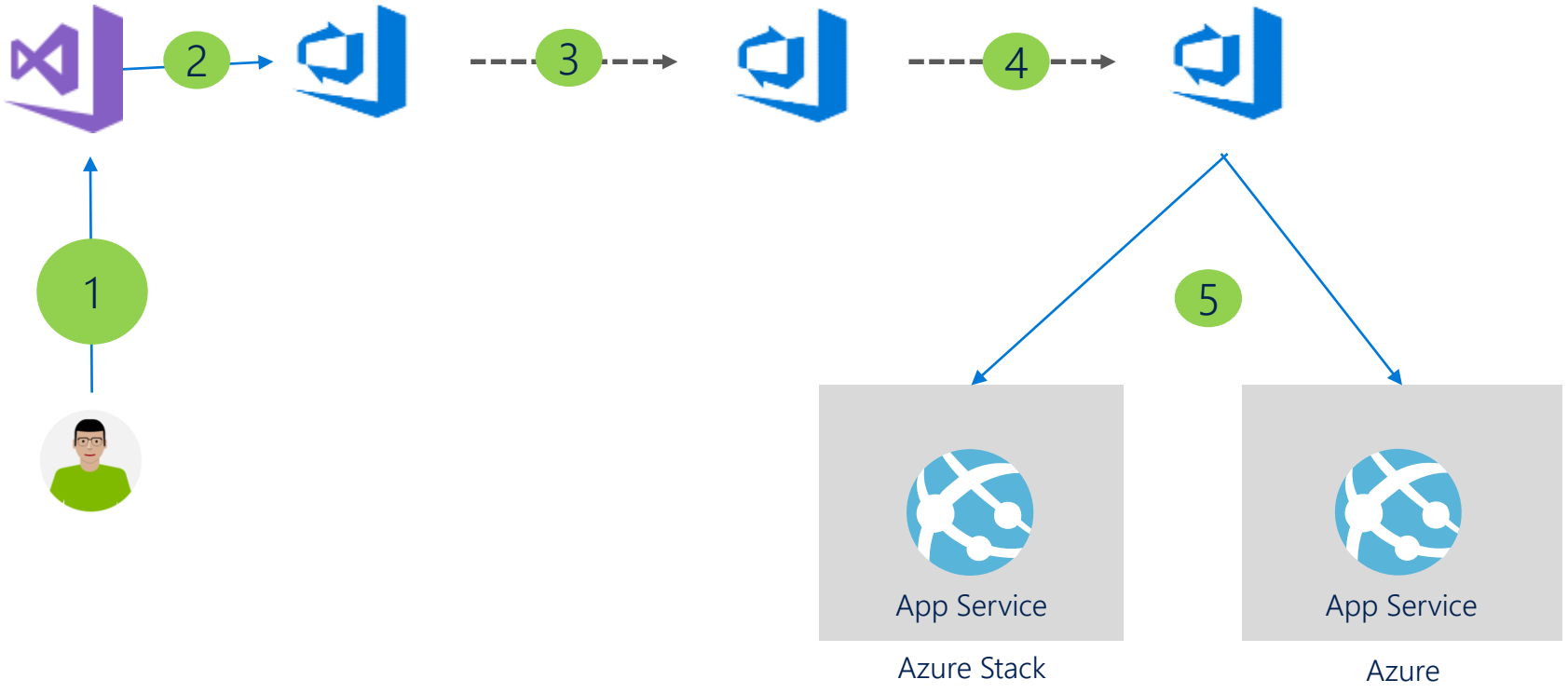
Data Sovereignty and Gravity

AI at the edge

Geo-distributed applications

Tiered data for analytics

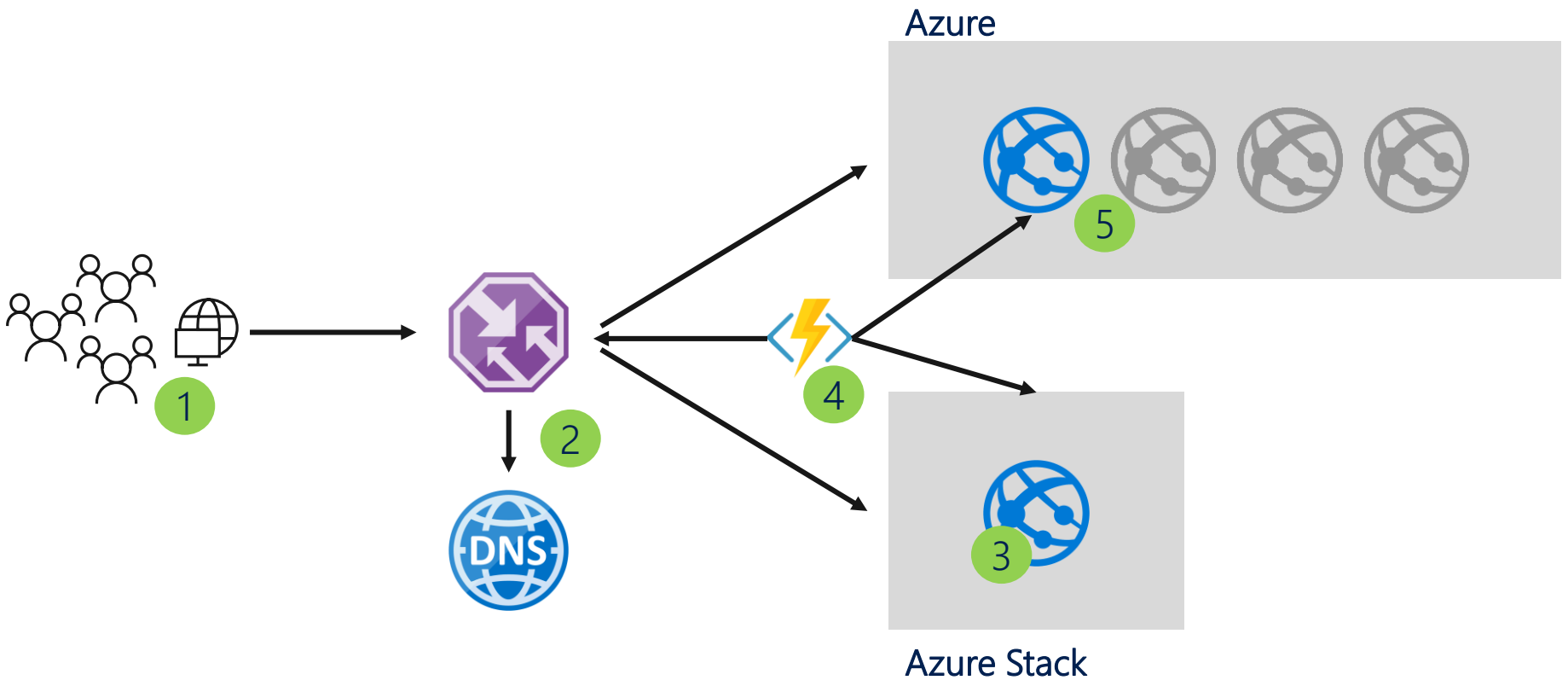
Hybrid DevOps



1. Changes to application code and ARM template.
2. Code and ARM template checked into VSTS Git.
3. Automatic application build and unit tests.
4. Orchestrated deployment of application artifacts with environment-specific parameters.
5. Application runs on App Service on both Azure and Azure Stack

https://docs.microsoft.com/en-us/vsts/pipelines/library/azure-stack?view=vsts

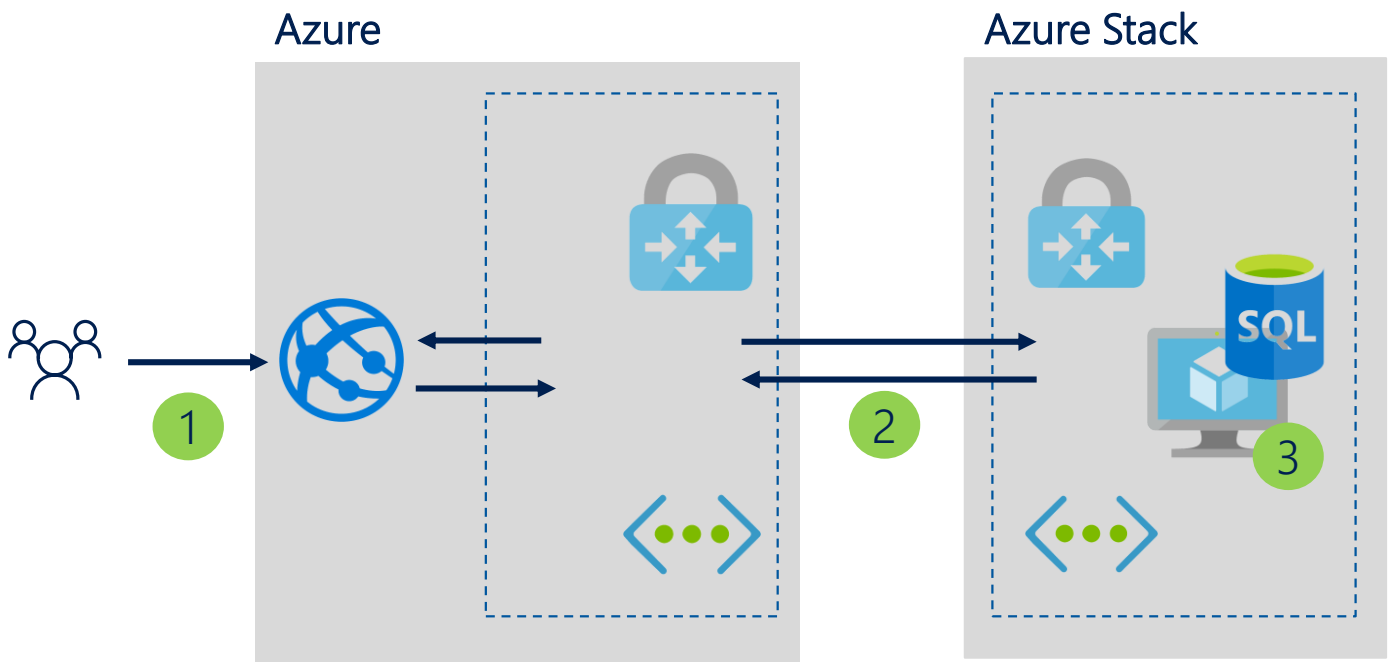
Cross Cloud Scaling



1. Users attempt to access the web app.
2. Traffic manager returns the Azure Stack DNS name.
3. Users load the Azure Stack web app.
4. Once a threshold is reached, a Function starts the Azure Web App and enabled the Azure Traffic Manager Route.
5. Traffic is routed to Azure.

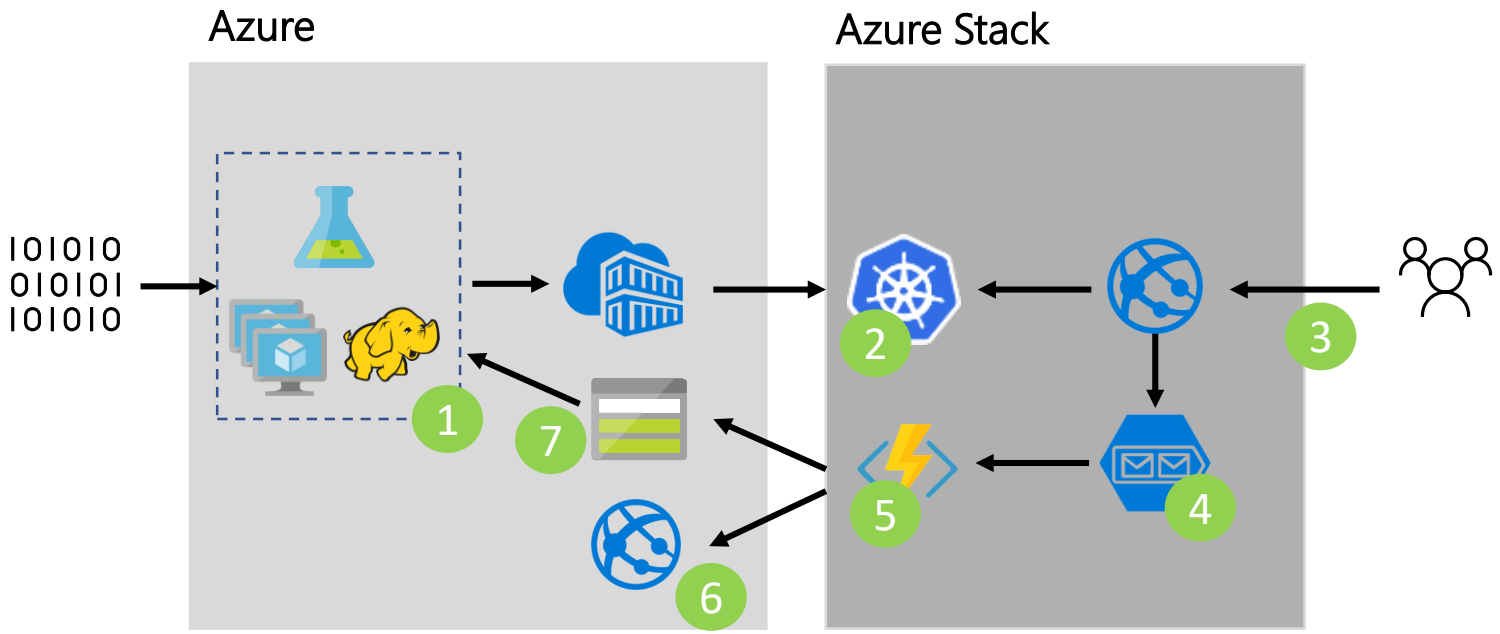
https://docs.microsoft.com/en-us/azure/azure-stack/user/azure-stack-solution-cloud-burst

Data Sovereignty and Data Gravity



1. User enters data into Azure-based web app.
2. Application commits data to database over VNet to VNet VPN connection to Azure Stack.
3. Data is stored in SQL database on VM in Azure Stack.

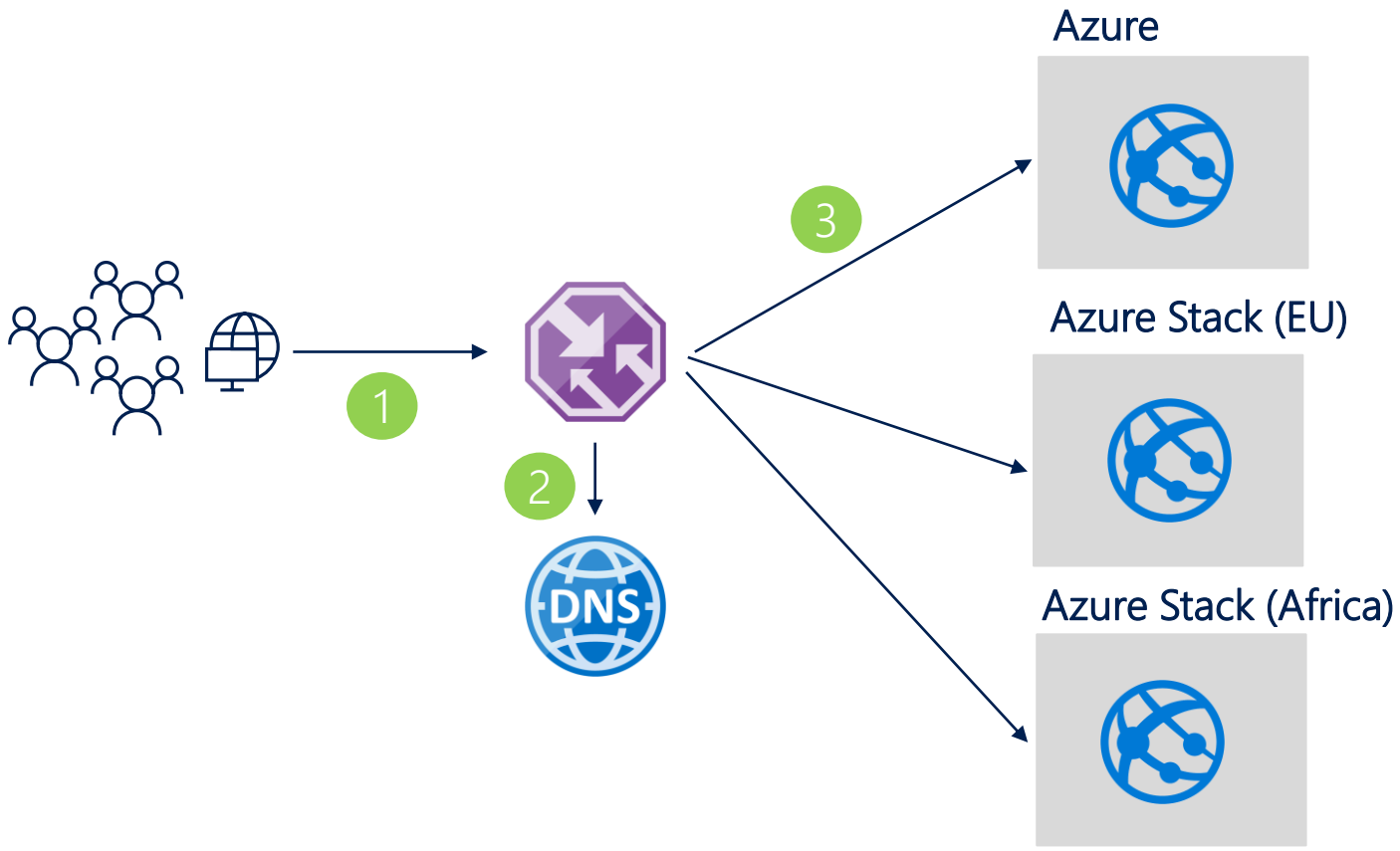
AI at the Edge



1. A model is trained in the cloud using Azure ML tools and containerized.
2. The model is deployed to a Kubernetes cluster on Azure Stack.
3. Input is scored against the model.
4. Insights from scoring are placed into a queue.
5. Compliant data and insights are sent to Azure.
6. Global insights are available in the global app.
7. Data from edge scoring is used to improve the model.

https://docs.microsoft.com/en-us/azure/azure-stack/user/azure-stack-solution-machine-learning

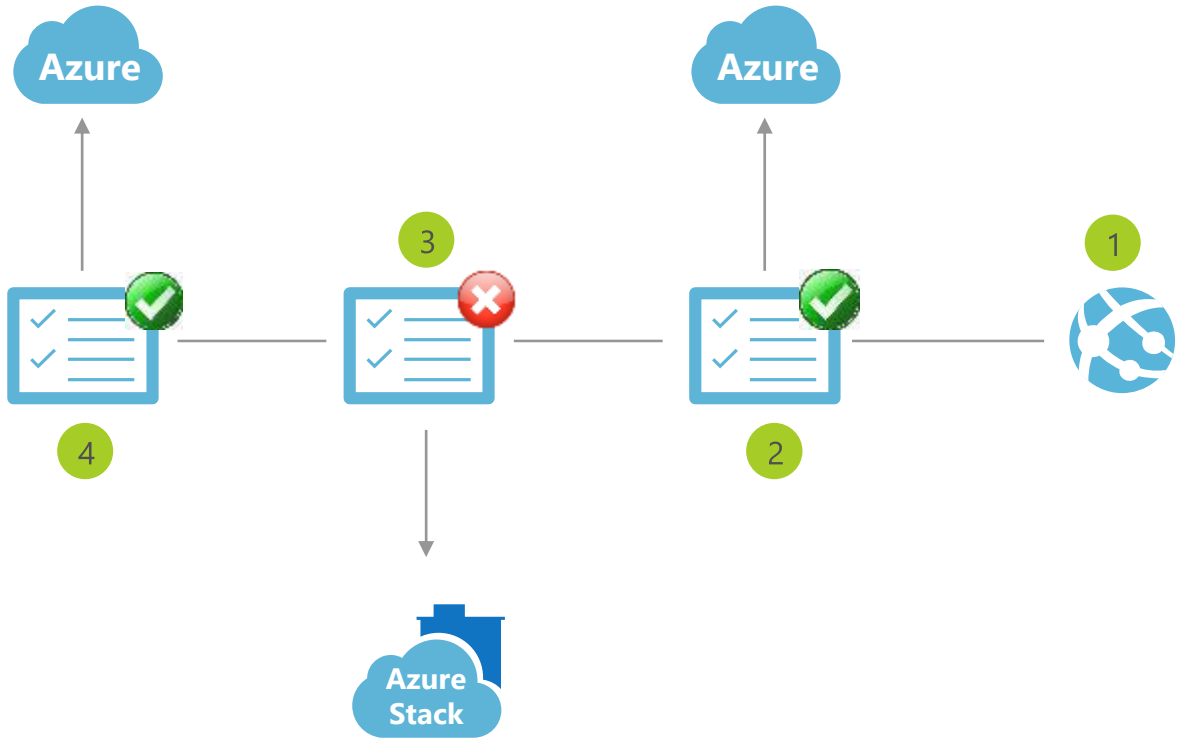
Geo-distributed applications



1. Users attempt to access application.
2. DNS queries Traffic Manager.
3. Traffic Manager returns the application (Azure or Azure Stack) that's closest to the user.

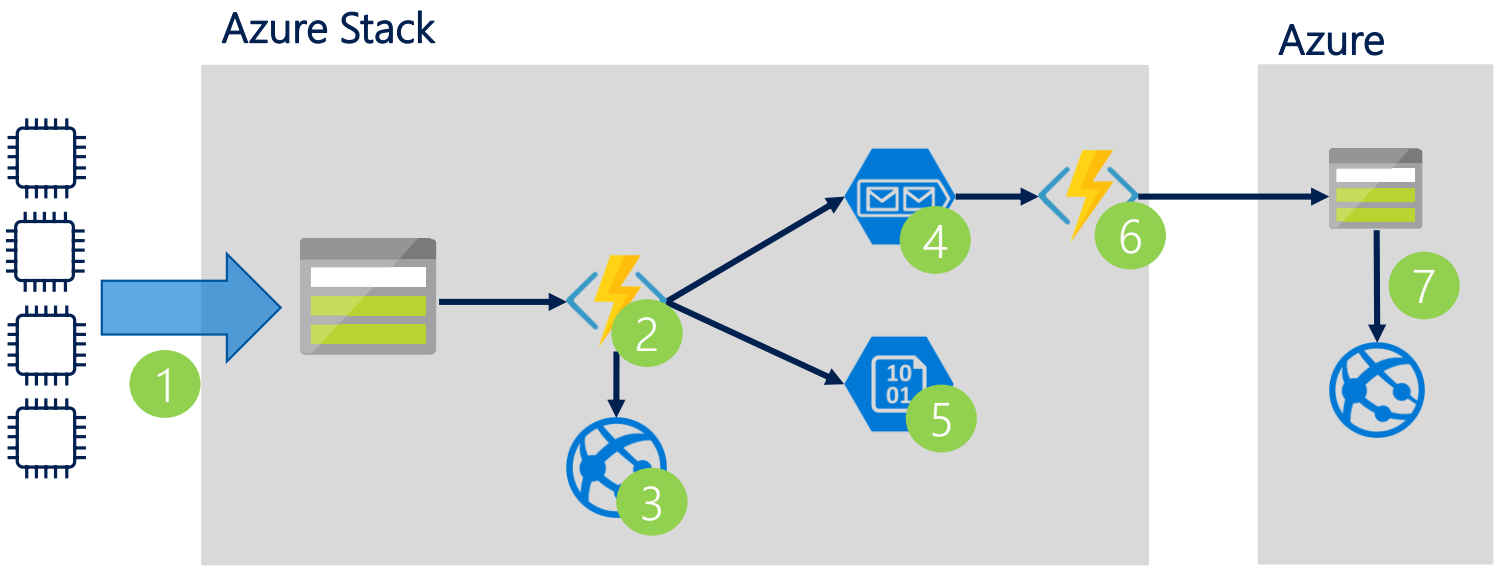
https://docs.microsoft.com/en-us/azure/azure-stack/user/azure-stack-solution-geo-distributed

Solution: Regulatory Compliance



1. Organization determines appropriate policies & regulations to which applications must align
2. Applications deemed compliant can be deployed to Azure in a consistent manner
3. If an application is not compliant, it can be deployed on premise such that additional compliance measures can be developed and integrated.
4. Compliance validation process is programmatic, using the same code, tools, and workflow.

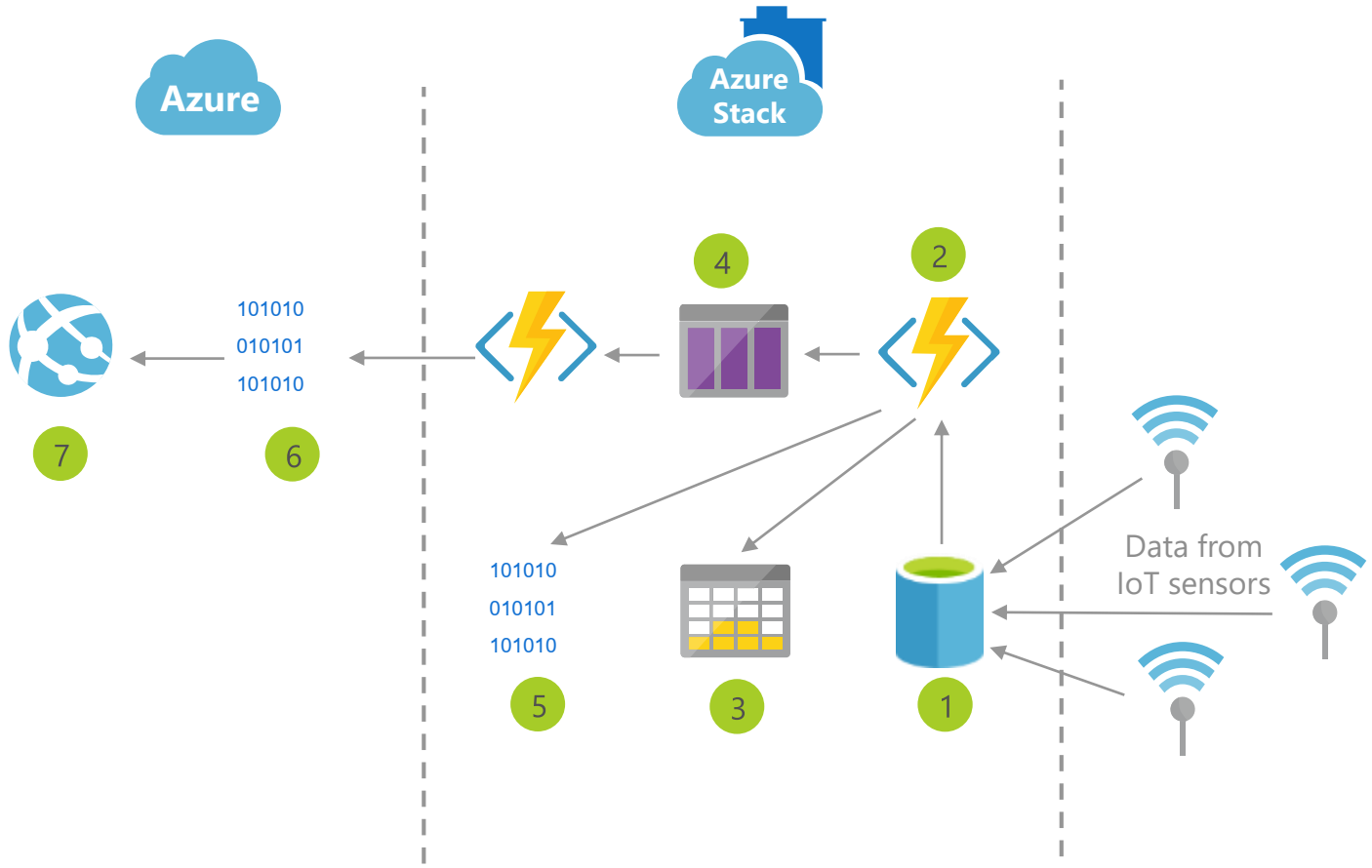
Tiered Data for Analytics



1. Data flows into a storage account.
2. Function on Azure Stack analyzes the data for anomalies or compliance.
3. Locally-relevant insights are shown.
4. Insights and anomalies are placed into a queue.
5. Bulk of data is placed into an archive.
6. Function sends data from queue to Azure storage.
7. Global insights are available in the global app.

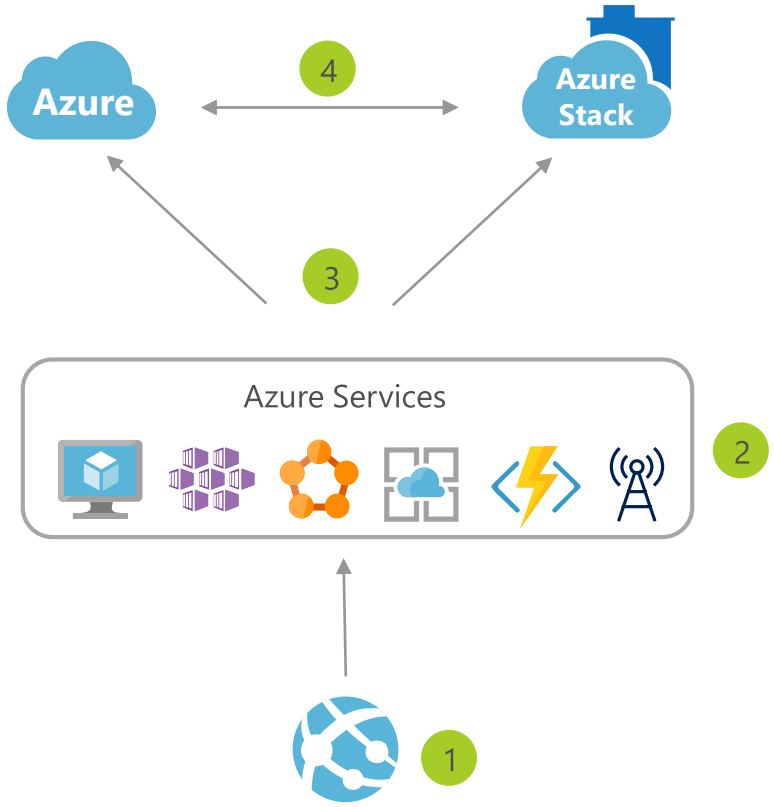
https://docs.microsoft.com/en-us/azure/azure-stack/user/azure-stack-solution-staged-data-analytics

Solution: Tactical Edge Solutions



1. Data flows from IoT sensors & devices into a storage account
2. Data is analyzed for anomalies and/or appropriate compliance requirements
3. High priority data, such as operational maintenance data, is displayed immediately in the dashboard
4. Strategic data requiring deeper analysis is queued up for upload to Azure
5. Data is stored into a locally accessible archive account
6. Azure Stack uploads data from the queue to the Azure cloud
7. Globally-relevant, strategic insights are aggregated to the global application

Solution: Application Modernization



1. A legacy application is identified to be modernized, or a new application is developed
2. Azure Services are leveraged by the developer to support the required functionality of the app
3. Organization decides to deploy the app to Azure or to Azure Stack
4. A new DevOps model for hybrid cloud is established that paves the way for hybrid cloud deployments

Azure Stack Fundamentals

Azure Stack promise

Consistent
application development

Azure services
available on-premises

Integrated
delivery experience

Integrated delivery experience

Integrated systems

CISCO

DELL EMC

Hewlett Packard Enterprise

HUAWEI

FUJITSU

Lenovo

Fast to deploy Easy to grow

Deploy quickly

Start with 4 servers

Scale as needed

Pay-as-you-use

Pay only for Azure services

Receive one bill

End-to-end Support

Get consistent support, no matter who you call

Azure Stack integrated systems

Cisco
DELL EMC
Fujitsu
Hewlett Packard Enterprise
HUAWEI
Lenovo

avanade
WORTMANN AG

Joint design, continuous co-validation

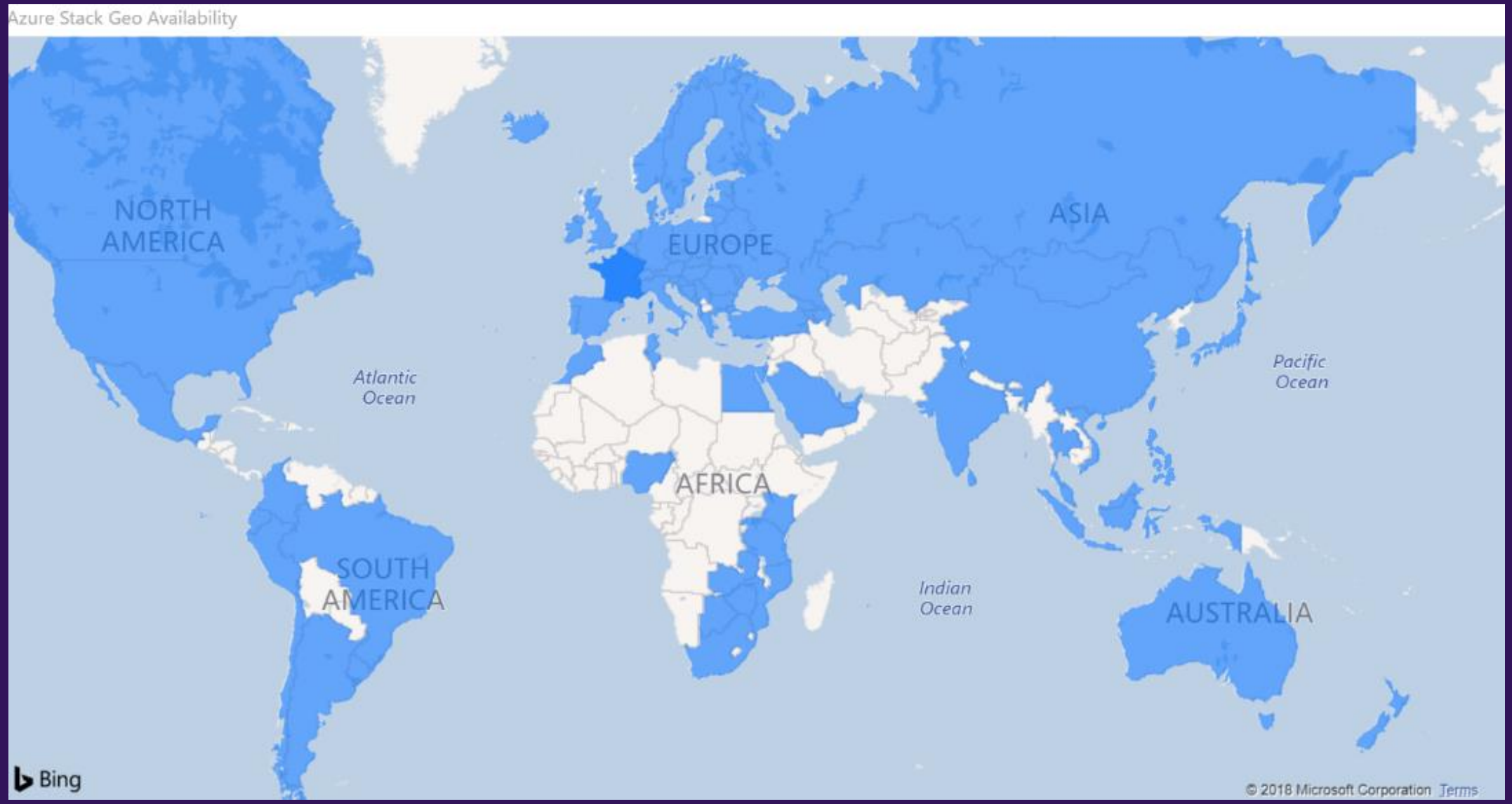
One Azure ecosystem

Work with the tools and technologies you want across Azure and Azure Stack

Goal: Applications and services that are certified for Azure work on Azure Stack

Azure Stack marketplace

Geo Availability – 92 countries worldwide



Check this link for Azure Stack availability

Video

Azure Stack Pricing & Licensing

Pay-as-you-use model

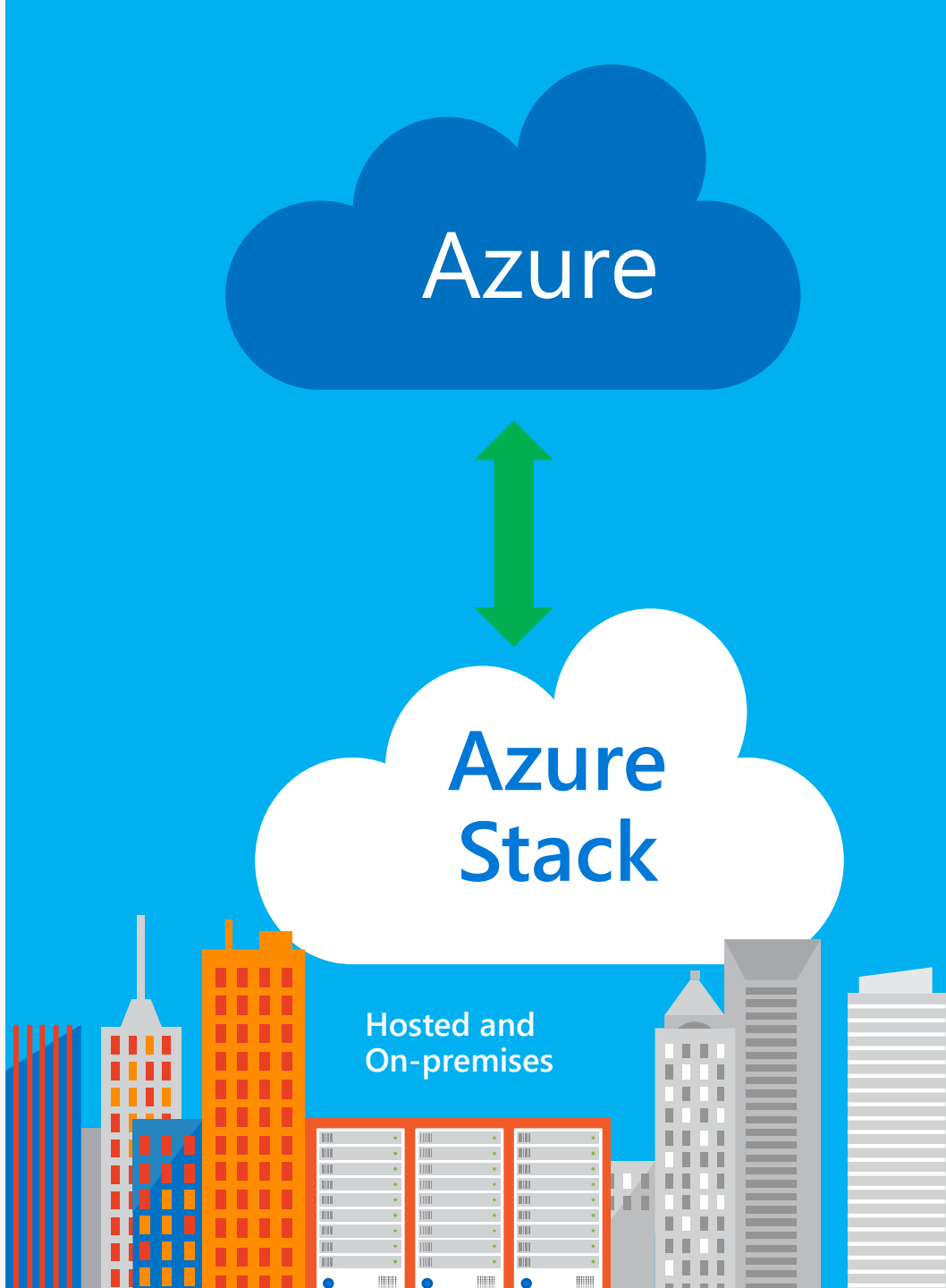
Extension of Azure business model

Fee for consumption: only pay for services running on Azure Stack

No upfront licensing fees: don’t pay until you use the service

Compatible with Azure: same subscriptions, monetary commitment, invoice

EA and CSP channels



Pay-as-you-use pricing

Pay-as-you-use Pricing

	Service	Price
Up-Front Licensing	Azure Stack initial deployment	$0 – *no upfront licensing fees*
Consumption-Based Fees	Cloud Infrastructure; Management, Security, & Identity; Networking; Service Fabric	$0
	Virtual Machines: Base VM	$0.008/vCPU/hour *($6/vCPU/month)*
	Virtual Machines: with Windows Server	$0.046/vCPU/hour *($34/vCPU/month)*
	Azure Blob Storage Service	$0.006/GB/month
	Azure Tables & Queues Storage Service	$0.018/GB/month
	Azure App Service (including Azure Functions)	$0.056/vCPU/hour *($42/vCPU/month)*

- *Customers can bring their own Windows Server and SQL Server licenses to run on Base VM images*
- *Windows Server BYOL – must license the entire region*

Capacity model

For disconnected scenarios: no usage metering or connection to commerce

Fixed fee, annual subscription: based on number of physical cores

License **all physical cores** on a stamp, with unlimited IaaS rights

Separate transaction from Azure: cannot use monetary commit, different billing

EA channel only

Capacity model pricing

App Service Package

$400/physical core/year

- Includes: App Service, Base VM, Azure Storage
- Must license all **physical cores** on the deployment
- Windows Server and SQL Server are BYOL (on-premises license)

IaaS Package

$144/physical core/year

- Base VM, Azure Storage only
- Must license all **physical cores** on the deployment
- Windows Server and SQL Server are BYOL (on-premises license)

Using Existing Licenses on Azure Stack

Windows Server

SQL Server

- Use existing licenses, pay only base VM price
- Alternative to Windows Server hourly prices on Azure Stack
- Azure Hybrid Use Benefit and License Mobility not required for dedicated deployments
- Must comply with all existing product terms

On-premises licenses with Azure Stack

- Windows Server VMs deployed using either native Windows Server VM image in Azure Stack (hourly meter) *or* on-premises Windows Server licenses in conjunction with Azure Stack base VMs
- Deploy SQL Server with on-premises SQL Server licenses in conjunction with Windows VMs
- AHUB/ License mobility not needed for dedicated environments
- On-premises software use should comply with on-premises licensing terms

Pay-as-you-go Azure Stack with On-Prem Windows Server and SQL Server

	Azure Stack Services	**Windows Server**			**SQL Server**	
	(excl. Windows VMs)	Native Azure Stack WS VM Meter	***or*** On-Prem Service Provider License	***or*** On-Prem End Customer License	On-Prem Service Provider License	***or*** On-Prem End Customer License
Dedicated Hosting *Single customer per Azure Stack region*	CSP	CSP	SPLA + base VM	EA + base VM	SPLA + Windows VM	EA + Windows VM
Multi-tenant Hosting *Multiple different customers per Azure Stack region*	CSP	CSP	SPLA + base VM	n/a – AHUB not enabled	SPLA + Windows VM	EA w/ license mobility + Windows VM

How to buy ?

Get going with Azure Stack

Develop

applications in Azure

Validate

Download Azure Stack Development Kit

Deploy

Order Azure Stack integrated systems for production deployment

Reference Info

Resource Links - 1

Public Site	aka.ms/azurestack
Public Documentation	aka.ms/azurestackdocs
FAQ	aka.ms/as_faq
Launch Blog	aka.ms/as_launch_blog
Whitepaper	aka.ms/Azurestackwhitepaper
What's New in Azure Stack	aka.ms/azurestackwhatsnew
Use cases	aka.ms/as_usecase
How to Buy	aka.ms/as_how_to_buy
Azure Stack Pricing	aka.ms/as_pricing

Channel9 videos https://channel9.msdn.com/Blogs/azurestack

https://channel9.msdn.com/blogs/Get-Started-with-Azure-Stack

and several good videos on YouTube "Ignite Channel"

Youtube "Azure Stack" Channel here

Resource Links - 2

Capacity Planner/Sizing	https://gallery.technet.microsoft.com/Azure-Stack-Capacity-24ccd822
Datasheet	aka.ms/as_product_datasheet
Roadmap	https://azure.microsoft.com/en-us/updates/?product=azure-stack
eBook	Azure Stack: Building an end-to-end validation environment
Customer Licensing Guide	aka.ms/as_licensing_guide_customer
MSP Licensing Guide	aka.ms/as_licensing_guide_serviceprovider
Field licensing Guide	aka.ms/as_field_licensing_guide
Field Guide (INTERNAL)	aka.ms/as_field_guide
Infopedia (INTERNAL)	aka.ms/infopediaazurestack
Geo Guidance	aka.ms/as_geo_msg_guidance_doc
Azure Stack Forum	aka.ms/azurestackforum

Resource Links - 3

OEMs/Hardware Partners	aka.ms/as_integrated_system
Cisco Blog	https://blogs.cisco.com/tag/azure-stack
Dell Blog	aka.ms/as_dellemc_launch_blog
HPE Blog	aka.ms/as_hpe_launch_blog
Lenovo Blog	aka.ms/as_lenovo_launch_blog
Azure Stack EcoSystem	aka.ms/as_ecosystem
Syndication Partners	aka.ms/azurestacksyndication
Partner Whitepaper	aka.ms/as_whitepaper_eco

Early Adaptor Initiative (EAI) Program for Service Providers

www.azurestackeai.com – requires MPN membership

Register for EAI webinars here

Recordings of previous webinars and PPTs here and video gallery

Resource Links - 4

Launch Blog	aka.ms/as_launch_blog
Forums	aka.ms/as_support_forum
Yammer	Yammer
Links to other resources	aka.ms/azurestackakaguide
App Services Overview	aka.ms/as_azure_app_services
Twitter	#AzureStack on Twitter
YouTube	aka.ms/AzureStack/YouTube

Resource Links (ASDK etc)- 5

Azure Stack Tools	aka.ms/as_azurestack_tools
Download ASDK	aka.ms/as_azurestack_try
Deployment Checker	aka.ms/as_deploy_checker
Prereq Checker	aka.ms/as_deploy_prereq
ASDK Guide	aka.ms/as_deploy_quickstart_overview
Deployment	aka.ms/azurestackdeployment
Post Install Script (PaaS)	aka.ms/configasdk
Templates	aka.ms/as_quickstart_templates

Customer Ready Trainings - 1

Learning Resources	Where to find them?	Available When?	Cost	What are they?
Azure Stack Documentation	aka.ms/AzureStackDocs	Now	Free	Updated continuously
Azure Learning Path for Azure Stack Operator	aka.ms/AzSOperatorLearningPath	Now	Free	Short videos (1 hour) to bring you basic knowledge on Azure Stack
Azure Stack Operator training Microsoft Official Course	www.microsoft.com/en-us/learning/course.aspx?cid=20537	Now	Fee-based	Offered as either on-demand or 5-day instructor-led classroom-based training course with hands-on labs.
Azure Stack MooC (OpenEdx online) course	aka.ms/AzureStackMOOC	Oct 2018	Free	Self-paced online course with hands-on labs and interactive multi-media enabled contents. Approximate 35-40 hours study time.
Azure Stack Operator Certification Exam	aka.ms/exam537	May 2018	Fee-based	Microsoft Certification for Azure Stack Operator

Customer Ready Trainings - 2

Learning Resources	Where to find them?	Available When?	Cost	What are they?
Skill Me Up Training	https://skillmeup.com/courses/player/implementing-azure-stack	Now	Fee-based ($10)	"Implementing Azure Stack" A 7-hour video series on Azure Stack
Skill Me Up Training	https://skillmeup.com/courses/player/architecting-hybrid-solutions-with-azure-stack	Now	Fee-based	"Architecting Hybrid Solutions with Azure Stack" A 1-hour video series on Azure Stack hybrid model overview
Skill Me Up Training	https://www.skillmeup.com/courses/player/mcw-azure-stack-hol	Now	Fee based	"Lab: Azure Stack Cloud Workshop" A 15-hour video series on implementing Azure Stack Development Kit

Also check full listing of courses from Skillmeup

Start in Azure

Will your Azure solution work on Azure Stack?

2 tools you can get from the Azure Stack Tool repository on GitHub

- Azure Resource Manager **Template Validator** for Azure Stack
- Azure Resource Manager **Policy** for Azure Stack

Guardrails to check your ARM template for resource dependencies that may not be available on Azure Stack

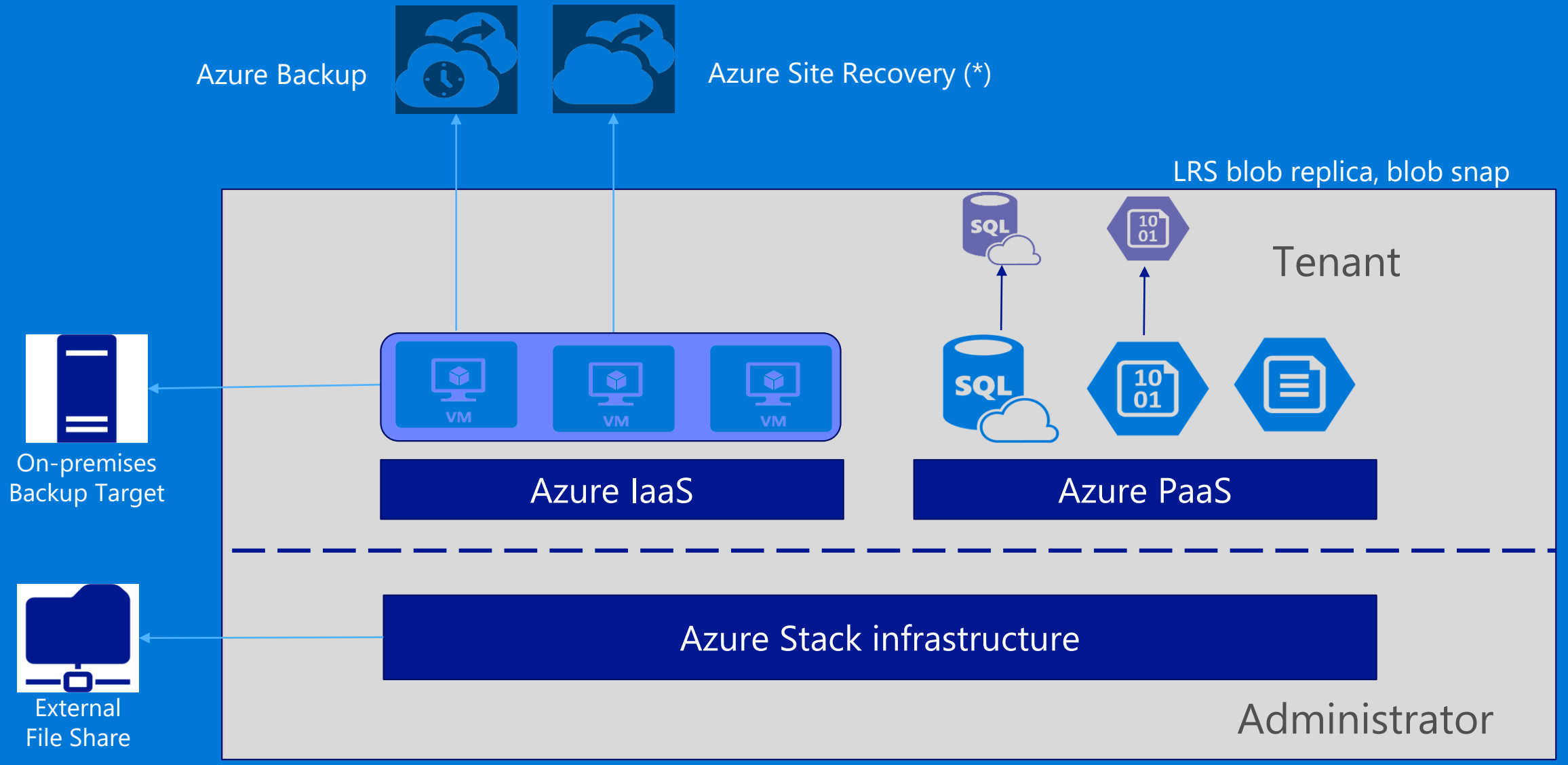
Download the tool:
https://github.com/Azure/AzureStack-Tools

Q&A

Microsoft

Thank You

Azure Stack: Backup and Disaster Recovery



(*) No failback with ASR is available at this time.

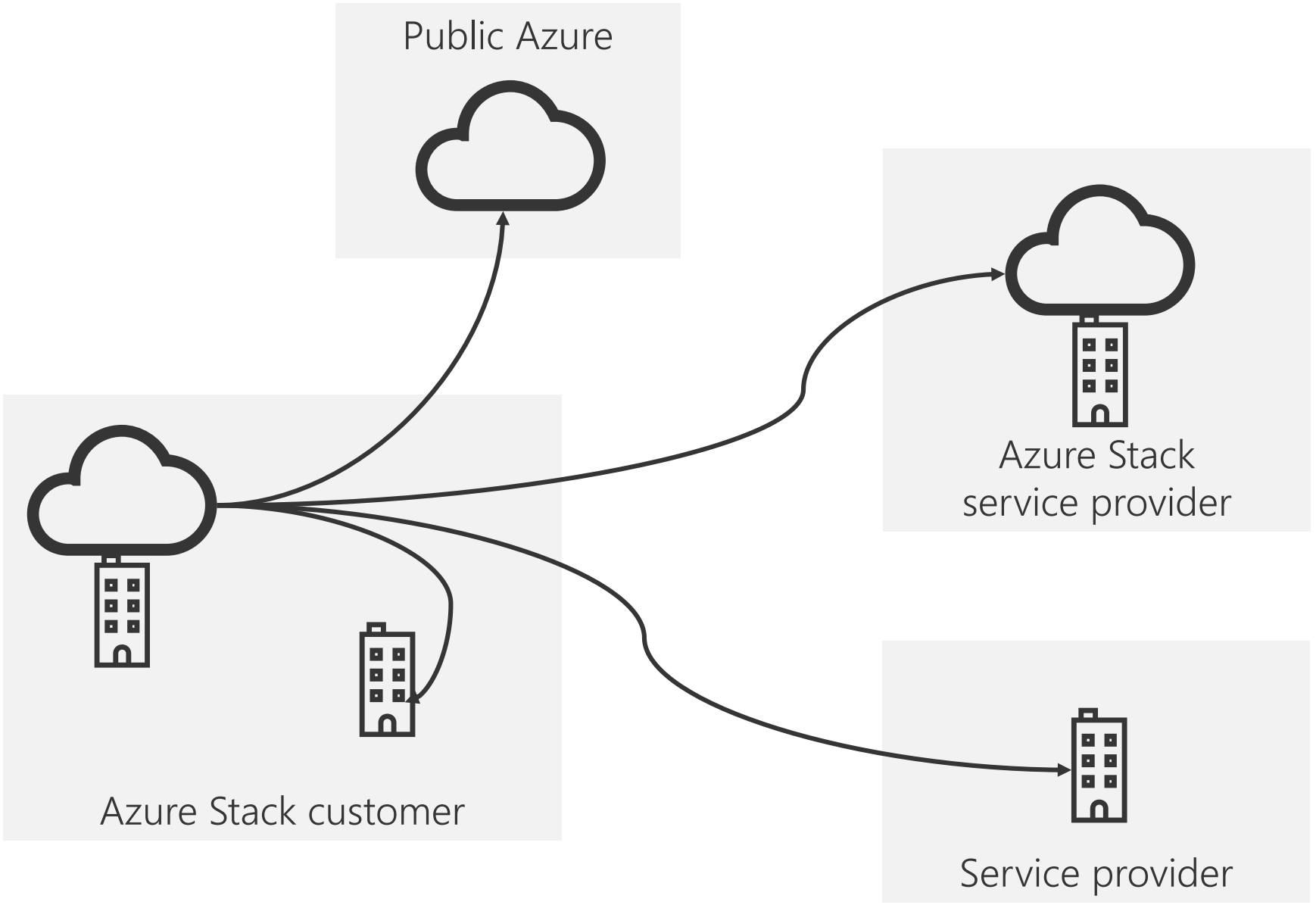
Azure Stack BC/DR partners

https://azure.microsoft.com/en-us/blog/protecting-applications-and-data-on-azure-stack/

Partner - product name	Validation complete	More information
Azure Backup Server	Complete	https://azure.microsoft.com/en-us/blog/backup-your-applications-on-azure-stack-with-azure-backup/
Azure Site Recovery	Complete	https://docs.microsoft.com/en-us/azure/site-recovery/azure-stack-site-recovery
Acronis	Complete	https://acronis.com/business/backup
Actifio	Complete	https://www.actifio.com/azure-stack-data-protection
Carbonite	Complete	https://www.carbonite.com/data-protection/high-availability/
Commvault	Complete	https://www.commvault.com/solutions/by-technology/virtual-machine-and-cloud/microsoft-azure
Dell EMC	Complete	https://www.dellemc.com/en-us/solutions/cloud/microsoft-azure-stack.htm
Micro Focus	Complete	Press Release
Quest	Complete	Blog post
Rubrik	Complete	https://www.rubrik.com/solutions/azure-stack/
Veritas	Complete	https://www.veritas.com/solution/microsoft-cloud
ZeroDown	Complete	http://www.zerodownsoftware.com/azure-stack/

Azure blog: https://azure.microsoft.com/en-us/blog/protecting-applications-and-data-on-azure-stack/

Protecting applications and data on Azure Stack



- Secure connections using S2S VPN and ExpressRoute
- Protect workloads across your datacenters, to a service provider, or directly to Azure
- User-driven experience
- Flexibility to enable protection at multiple levels – application, OS, volume
- Flexibility to use the products you trust