Windows on AWS – Infrastructure overview for system engineers

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Why AWS is the best place to Migrate & Modernize Microsoft Workloads

Figure 1. Magic Quadrant for Cloud Infrastructure as a Service, Worldwide

Source: Gartner (July 2019)

AWS Recognized as a Cloud Leader for the 9th Consecutive Year

Gartner, Magic Quadrant for Cloud Infrastructure as a Service, Worldwide, Raj Bala, Bob Gill, Dennis Smith, David Wright, July 2019. ID G00365830. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose. The Gartner logo is a trademark and service mark of Gartner, Inc., and/or its affiliates, and is used herein with permission. All rights reserved.

Why Customers Choose AWS for their Microsoft Workloads

Most Experience

11

Years running Windows workloads, longer than Azure has existed

Greater Reliability

7x fewer

downtime hours in 2008 than Azure

Downtime hours from 1/1/18 to 12/31/18 pulled directly from the public service health dashboards of the major cloud providers.

Higher Availability

69

Availability zones spanning 23 geographic regions

Better Price-Performance

2x greater

Price-Performance than Azure when running Windows and SQL Server

Greater Security

89

Compliance certifications

HIPAA, FISMA, ITAR, EU Model Clauses

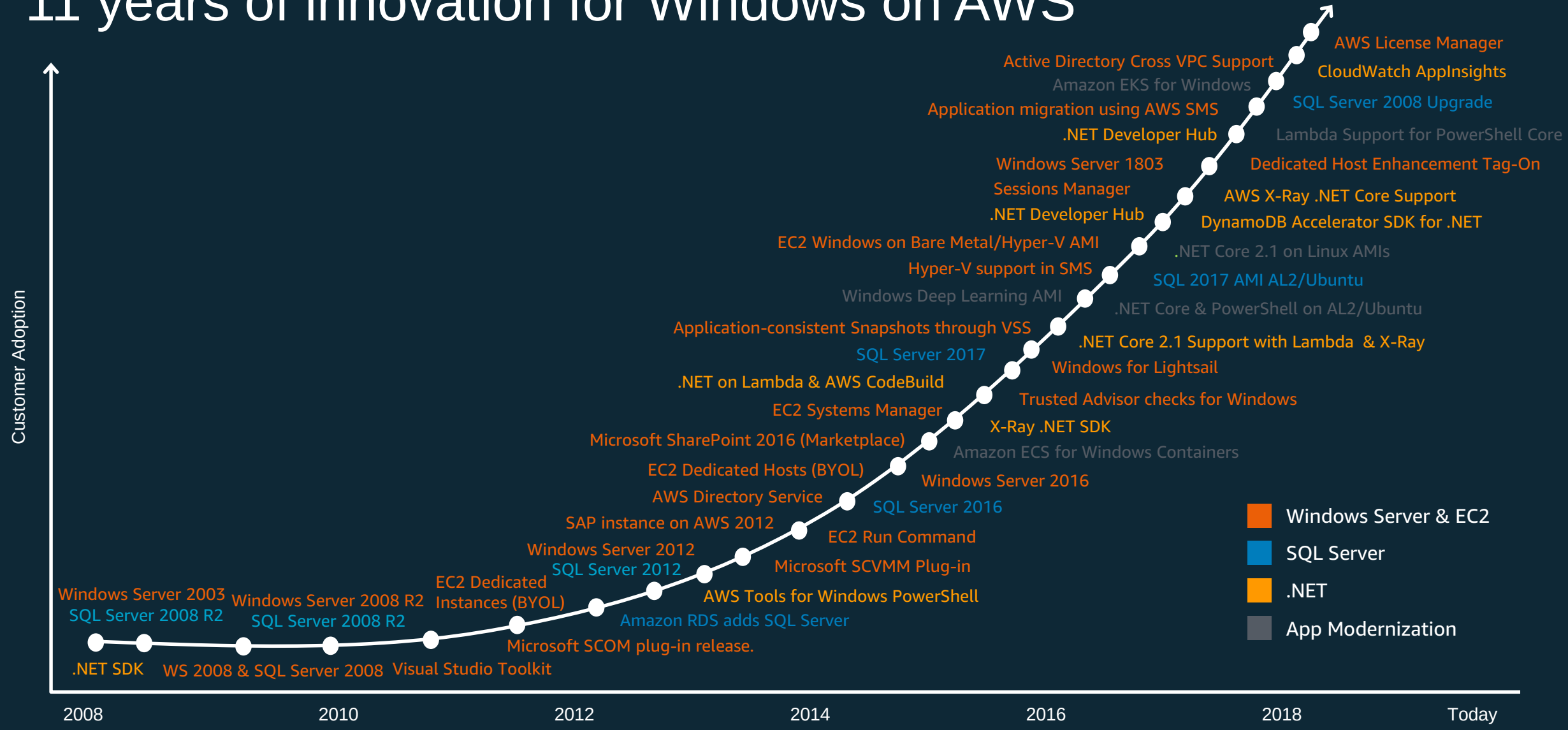
SOC-1,2,3 FIPS, ISO

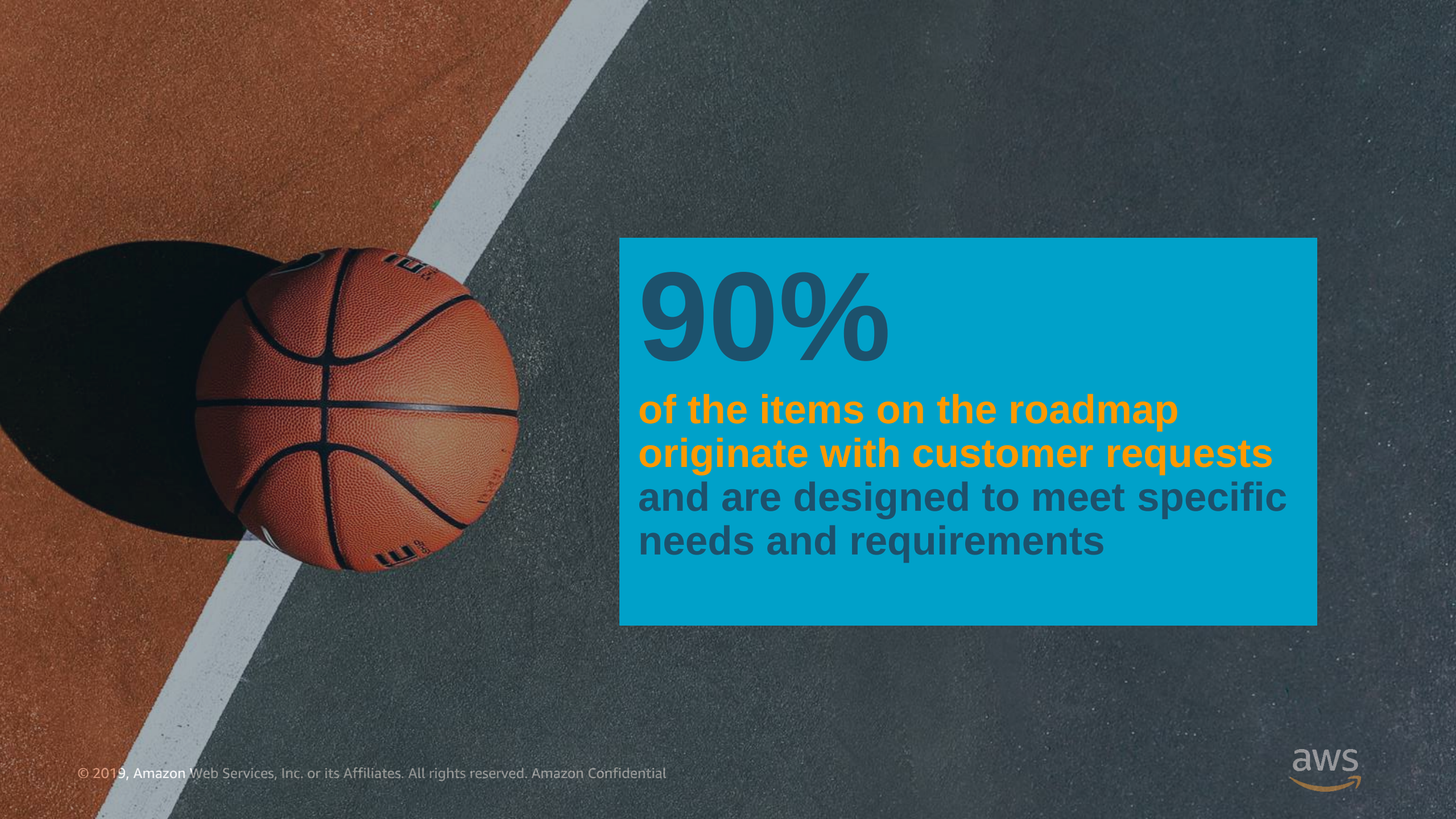
Better TCO

56% lower

Cost of operations over 5 years after migrating Windows to AWS

11 years of innovation for Windows on AWS





90%

of the items on the roadmap originate with customer requests and are designed to meet specific needs and requirements

AWS hosts nearly 2x as many Windows Server instances in the cloud as Microsoft

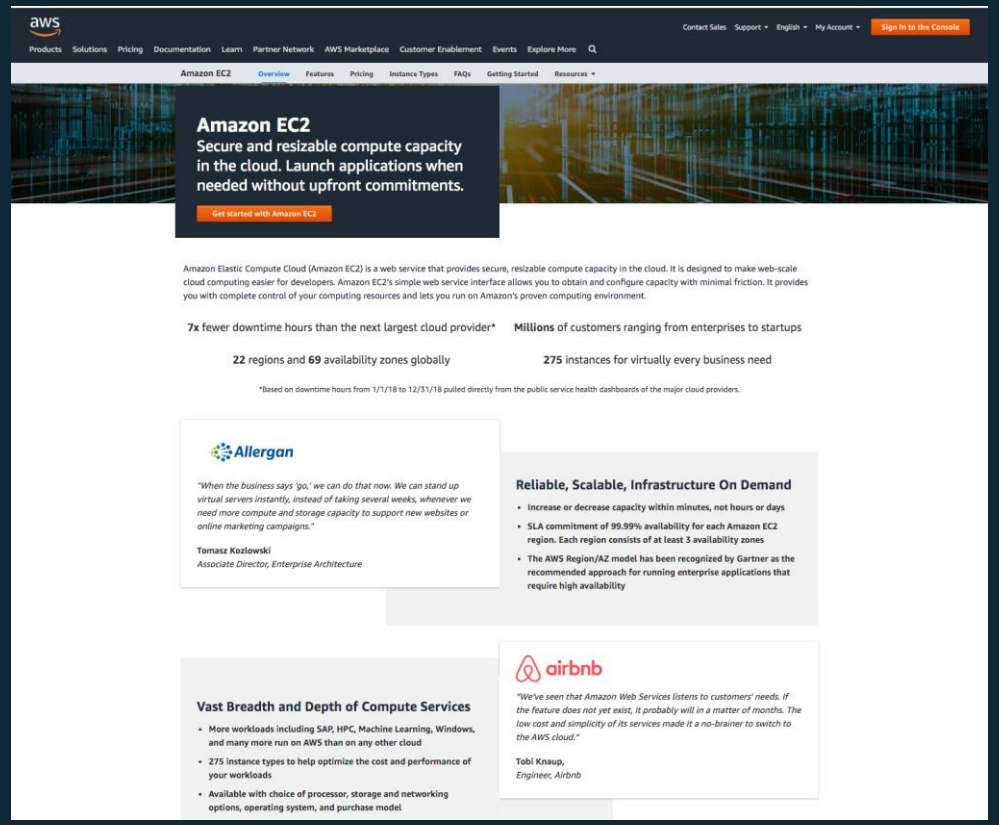
Source: IDC, Windows Server Operating Environment Market Update, Doc # US44217118, Aug 2018

re:Invent 2019 announcements for Windows

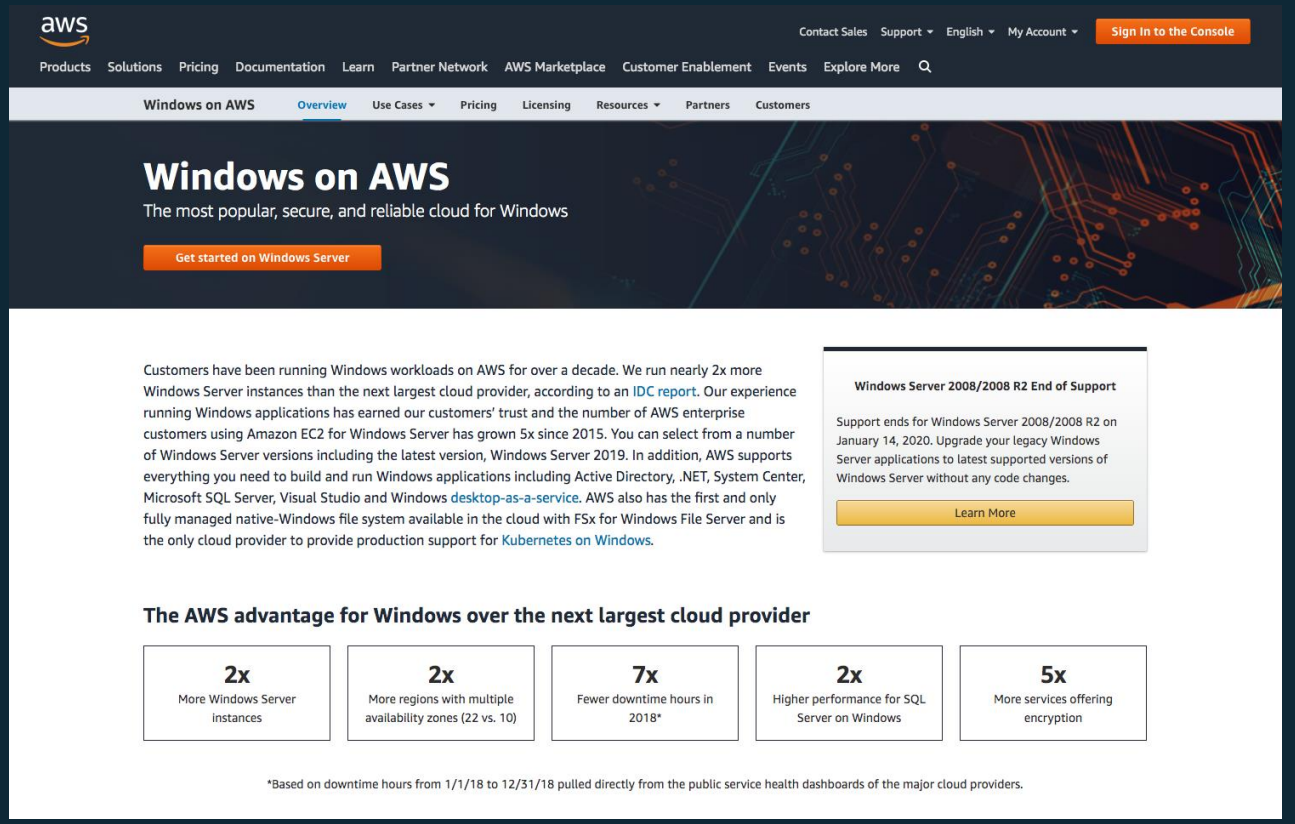
- FSX – Fully-managed native-windows compatible storage, low-cost multi-AZ file system
- License Manager – Ability to enforce license limits, easier tracking and governance on-prem/cloud
- Cloud-like dedicated host – integration with AWS License Manager 2019
- AWS Compute Optimizer – Identify optimal EC2 instance and EC2 auto scaling groups using ML engine
- AWS SSO – simplified user experience with central management and support for Azure AD (SAML, SCIM)
- Amazon EC2 Image Builder – automate creation, management and deployment of “golden” VM images
- AWS Launch Wizard – Guided experience to size, configure and deploy select enterprise workloads on AWS
- Migration acceleration program for Windows (Q1 – 2020) – Assessment, planning and execution
- AWS End-of-support Migration program (EMP) solution for migrating end of support Windows workloads
- Application Modernization Lab – Programmatic application modernization strategy to enable customers
- Group Managed Service Accounts (gMSA) support in ECS and EKS – containerize your existing applications without breaking AD integration
- Database freedom – Database migration from SQL Server to AWS-native database services (e.g. Aurora)
- Deep Learning AMI on Windows on AWS (85% of TensorFlow projects in the cloud happen on AWS)
- AWS Data Exchange – easily exchange data in the cloud between data providers and data subscribers

Getting started with AWS Compute Services (EC2)

Visit the AWS EC2 site
https://aws.amazon.com/ec2/

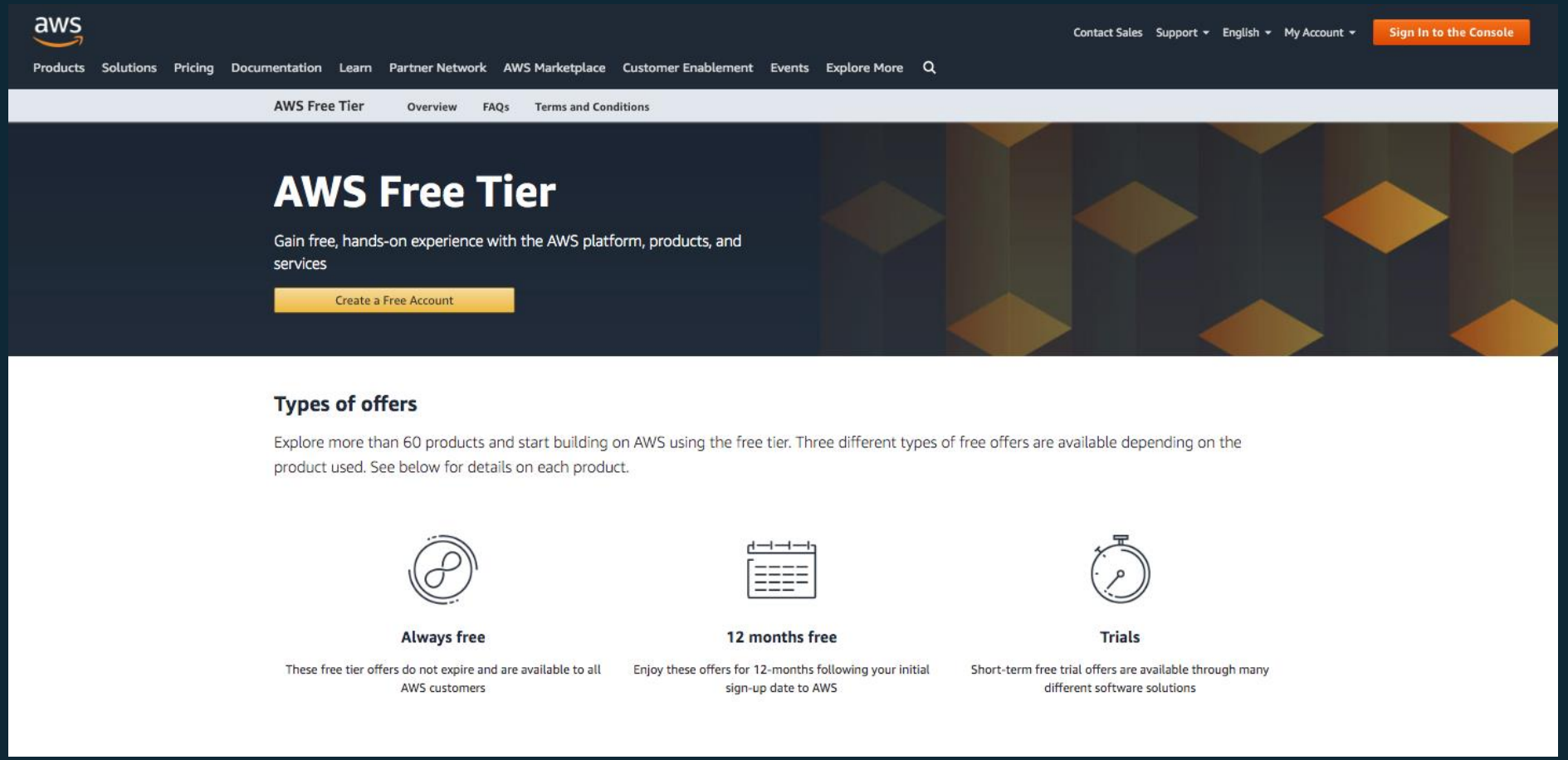


Check out the Windows on AWS site
https://aws.amazon.com/windows

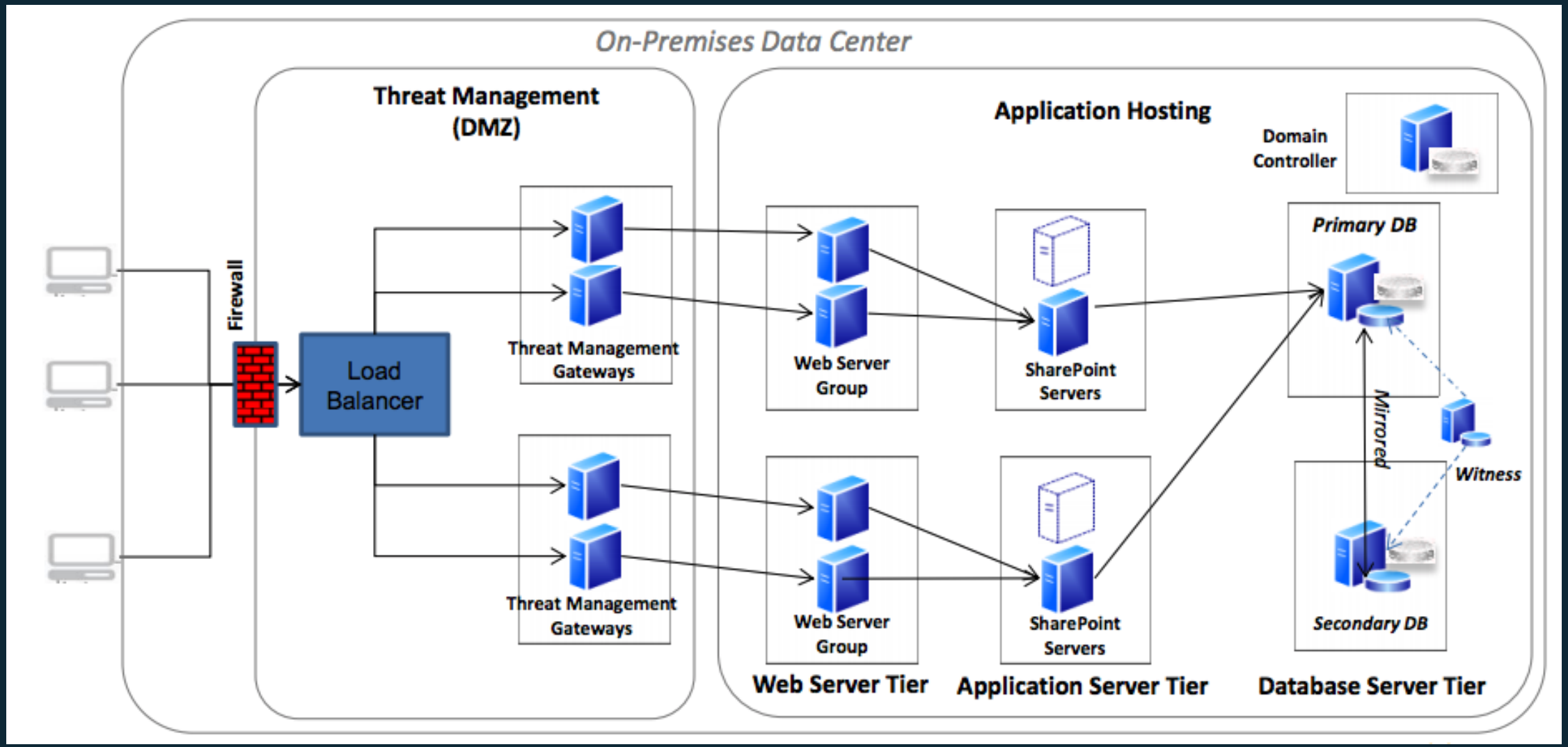


Experiment with AWS Free tier

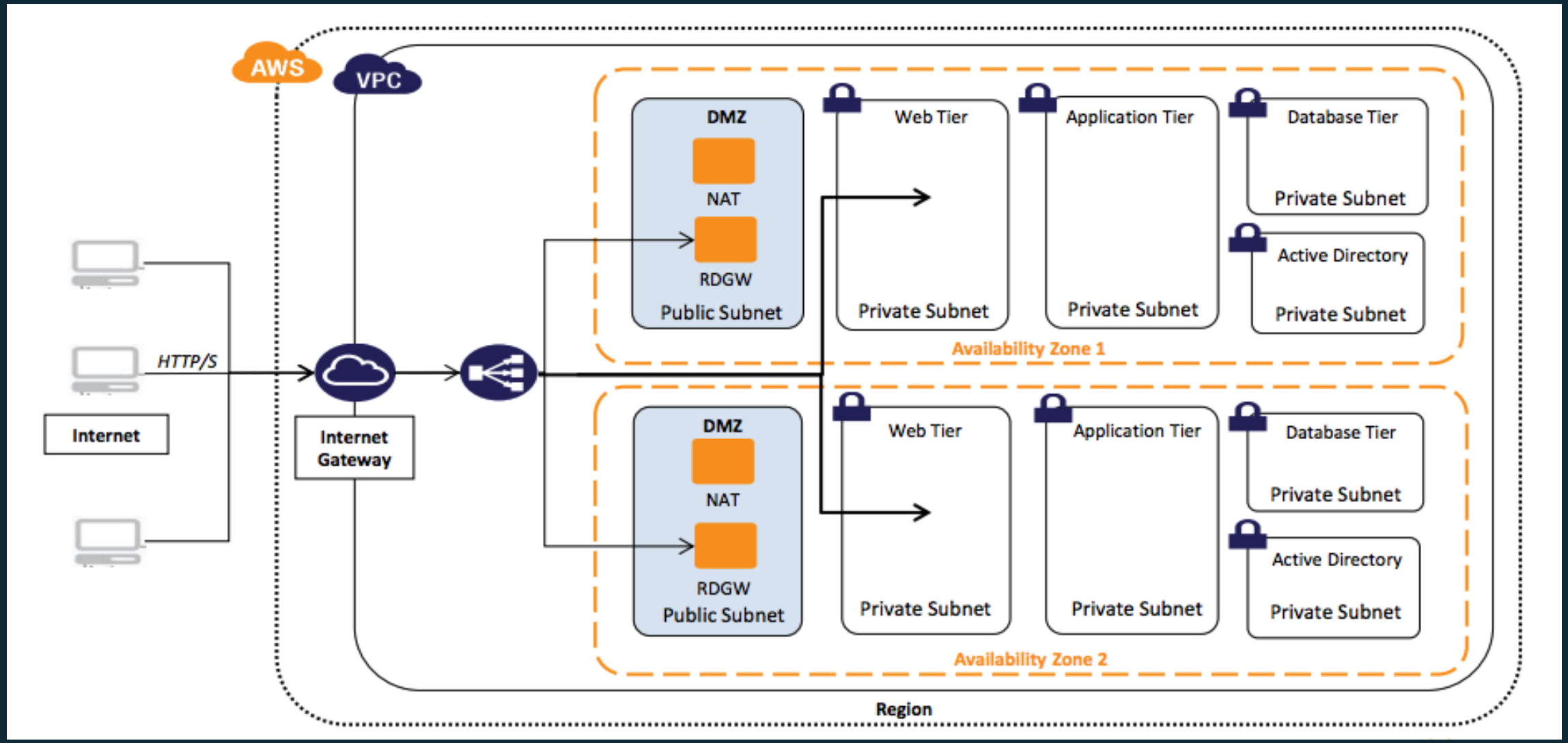
AWS provides a free tier, go try for yourself! https://aws.amazon.com/free/



Cloud infrastructure concepts (on-prem)



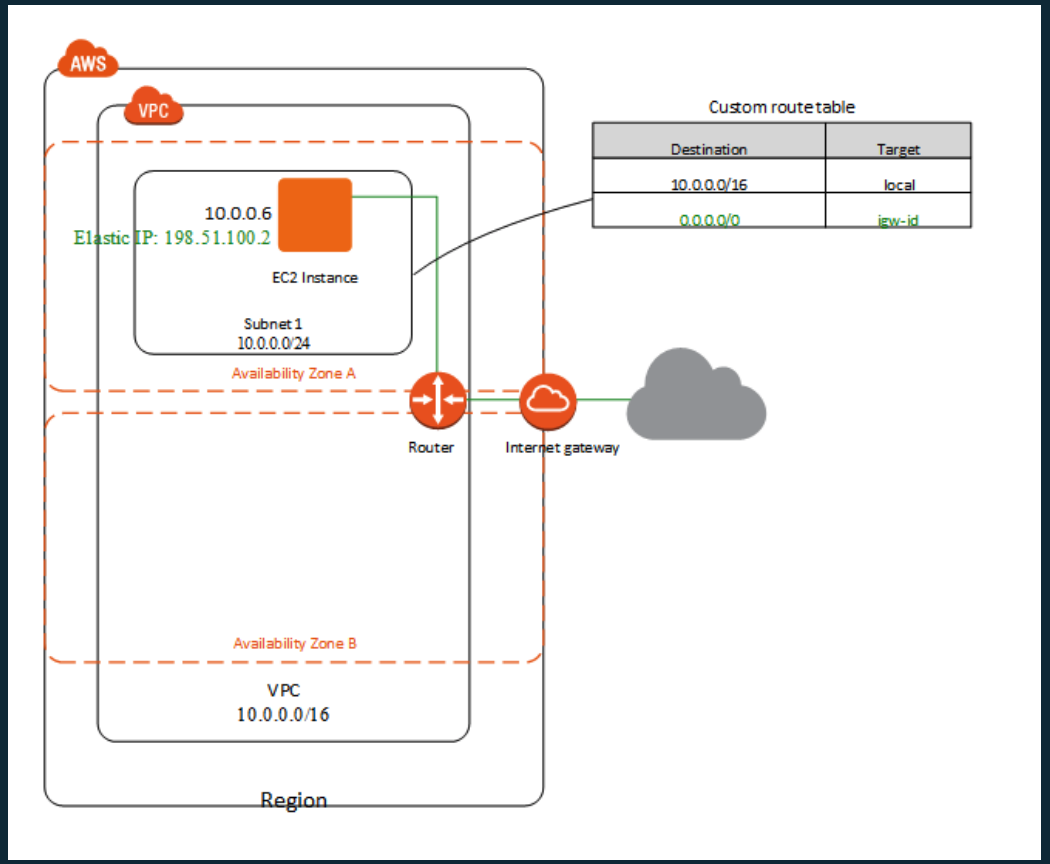
Cloud infrastructure concepts (AWS)



Networking concepts in AWS

Virtual Private Cloud (VPC) is a core foundation for AWS

- Resembles tradition network in data center
- Benefits of scalable infrastructure of AWS
- VPC is a virtual network dedicated to your AWS account.
- A subnet is a range of IP addresses in your VPC.
- A route table contains a set of rules, called routes, that are used to determine where network traffic is directed.
- An internet gateway is a horizontally scaled, redundant, and highly available VPC component that allows communication between instances.
- A VPC endpoint enables you to privately connect your VPC to supported AWS services



Network security concepts overview

Firewalls (on-prem to AWS)

- Network access control lists (NACL) function as a firewall across subnets (stateless)
- Security groups function as a firewall for EC2 instance (stateful)

Network isolation

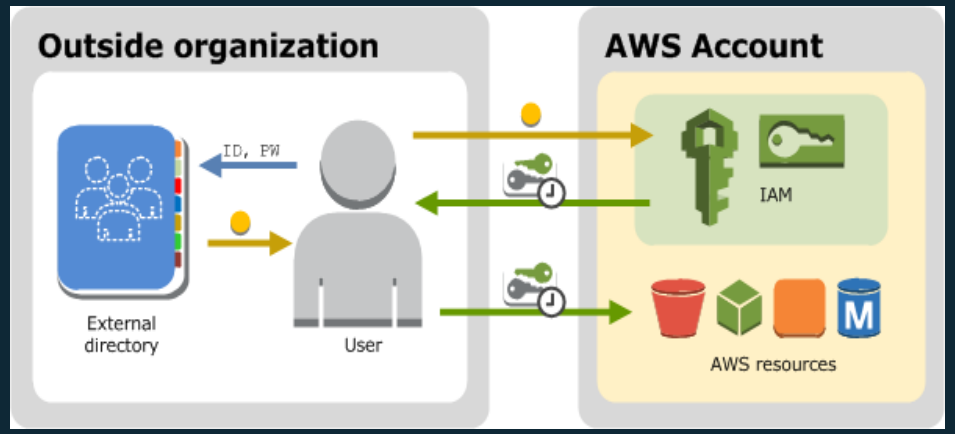
- VPC provides logical isolation of the AWS cloud
- Complete control of network environment
- IP address range
- Creation of subnets
- Route table configuration
- Network gateways

Threat management and detection

Amazon GuardDuty is an integrated threat management solution for AWS

- Uses machine learning, anomaly detection and integrated threat management
- Identify and prioritized threats, and analyzes events across multiple AWS data sources

Active directory and AWS (various options)

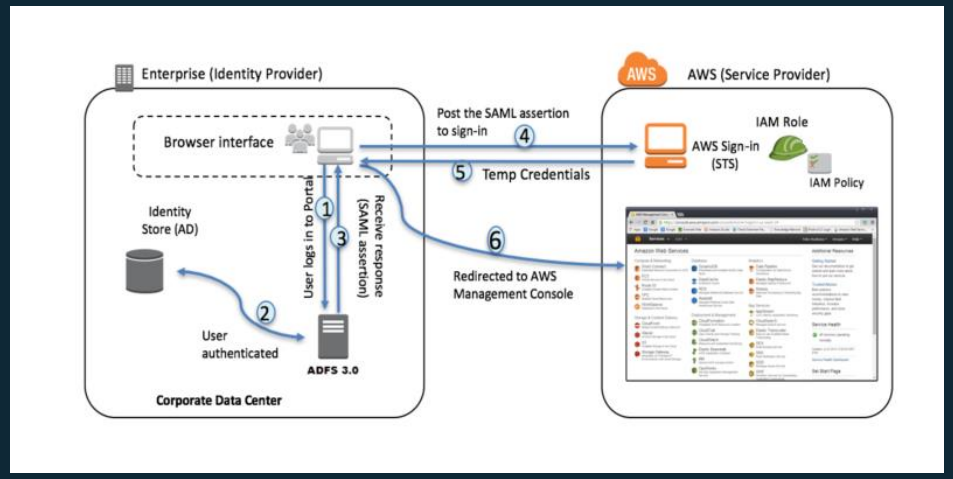


AWS Identity and Access Management (IAM)

- Securely manage AWS services and resources.
- Create and mange AWS users and groups
- Permissions to allow/deny access to AWS resources

Use Microsoft AD to manage the windows environment

- Promote a domain controller to one of the EC2 Windows instances for the existing domain to work with AWS

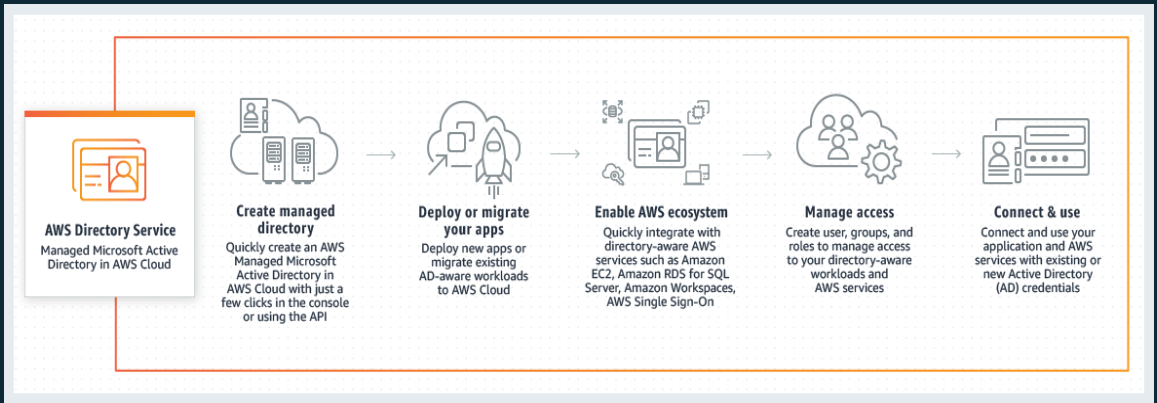


ADFS Federation to AWS

- IAM federated sign-in through AD and ADFS
- Centrally manage user security credentials
- Minimize administrative overhead

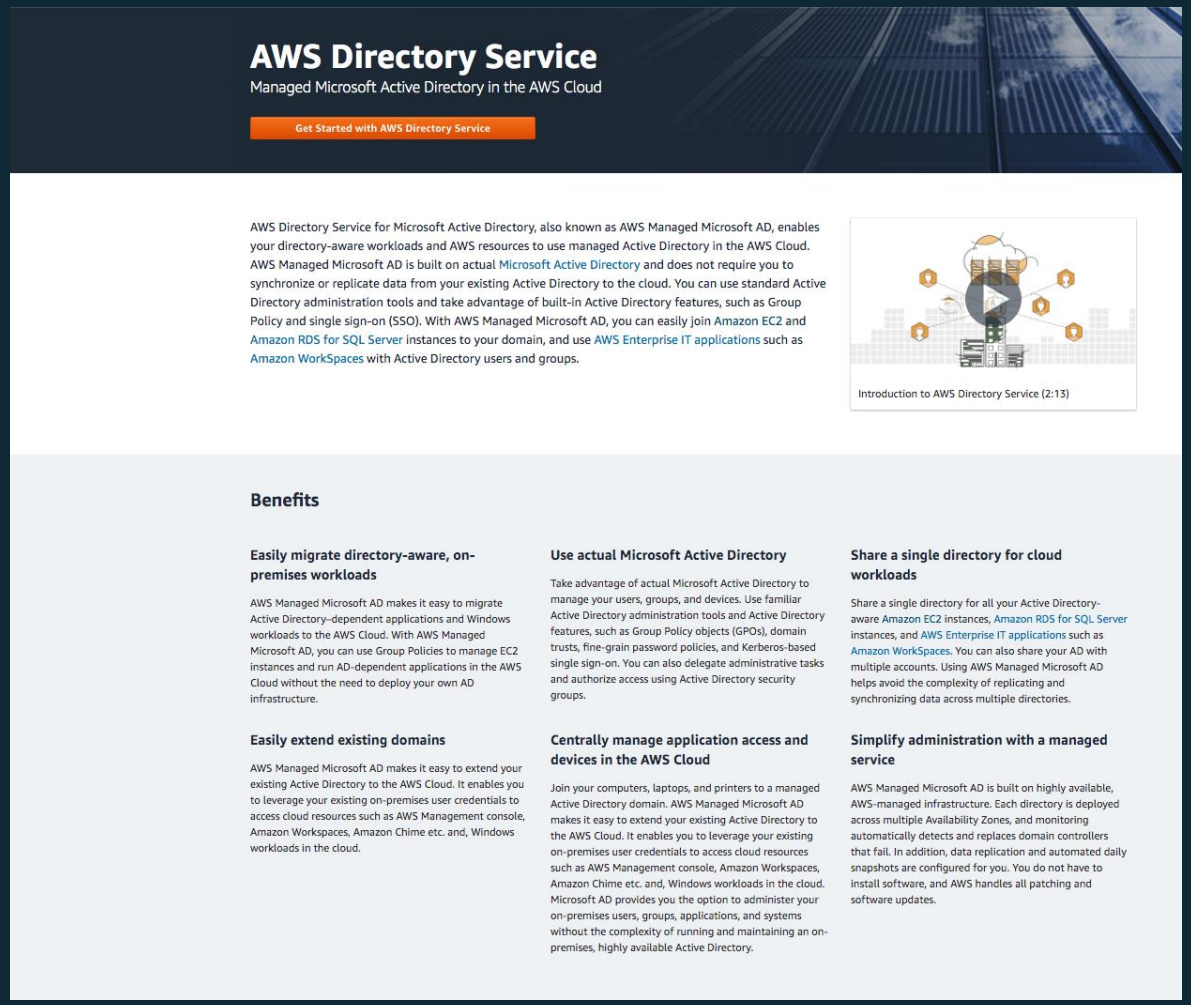
https://aws.amazon.com/blogs/security/aws-federated-authentication-with-active-directory-federation-services-ad-fs/

AWS Directory Service

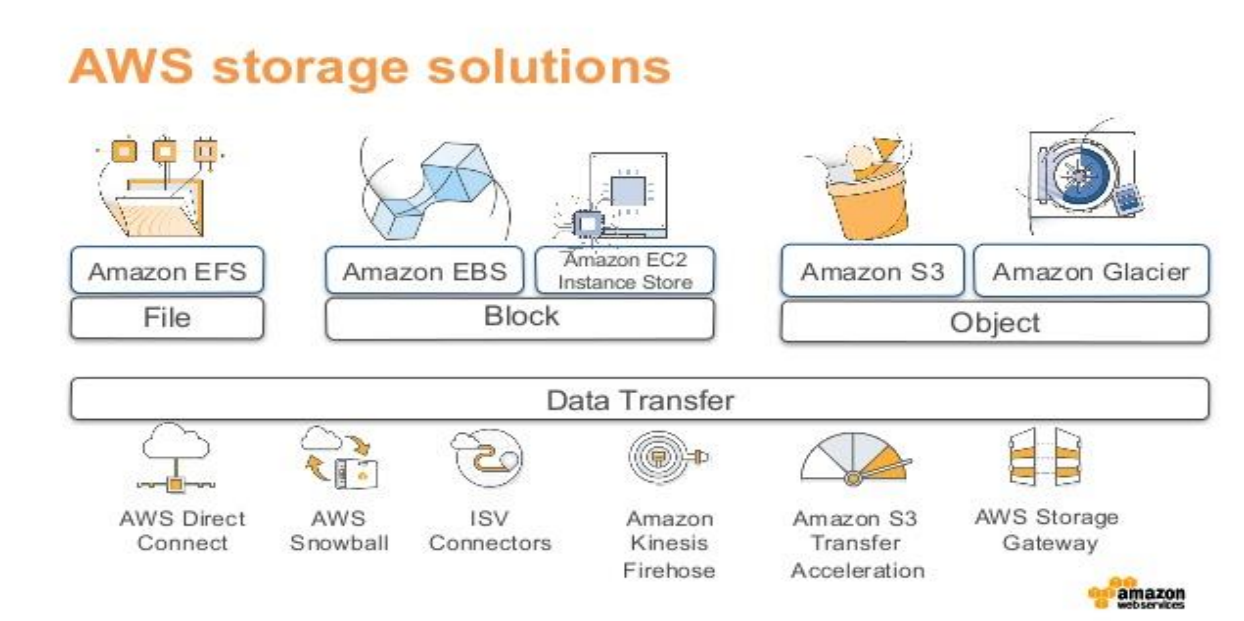


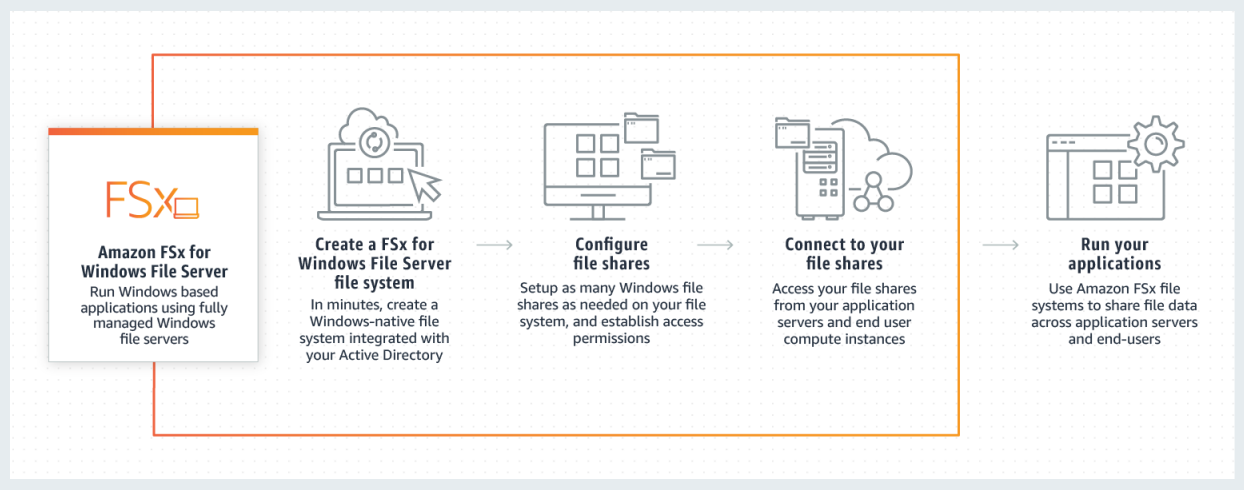
AWS Directory Service

- Managed AD experience in AWS cloud
- Easy migration of directory-aware on-prem workloads
- Extension of existing domains
- Central management for applications access and devices



AWS Cloud Storage





Typical enterprise data center storage

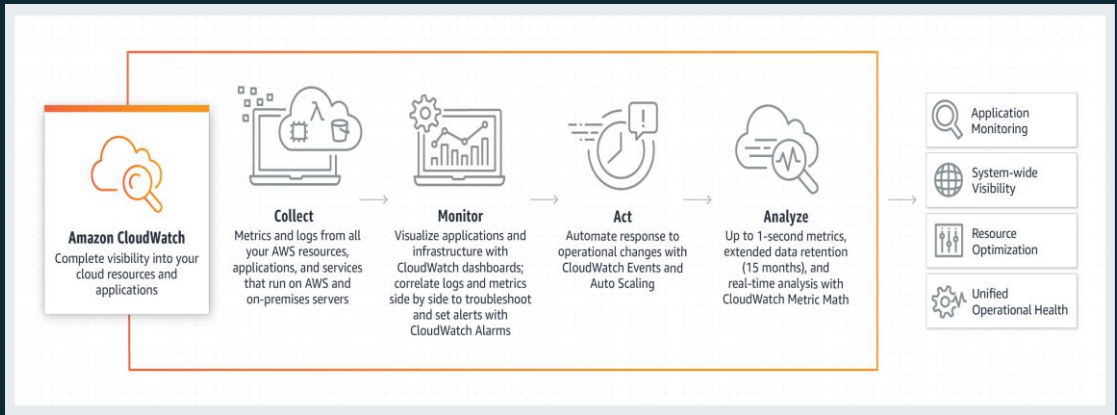
- Storage array networks (SAN)
- Network attached storage (NAS)
- Windows file system

Typical AWS many storage options

- Amazon Elastic Block Store (EBS)
- Amazon EC2 Instance Store
- Amazon Simple Storage Service (S3)
- Amazon Glacier
- Amazon Elastic File System (Amazon EFS)
- Amazon FSx for Windows File Server
- Amazon Firehose Kinesis
- AWS Storage Gateway

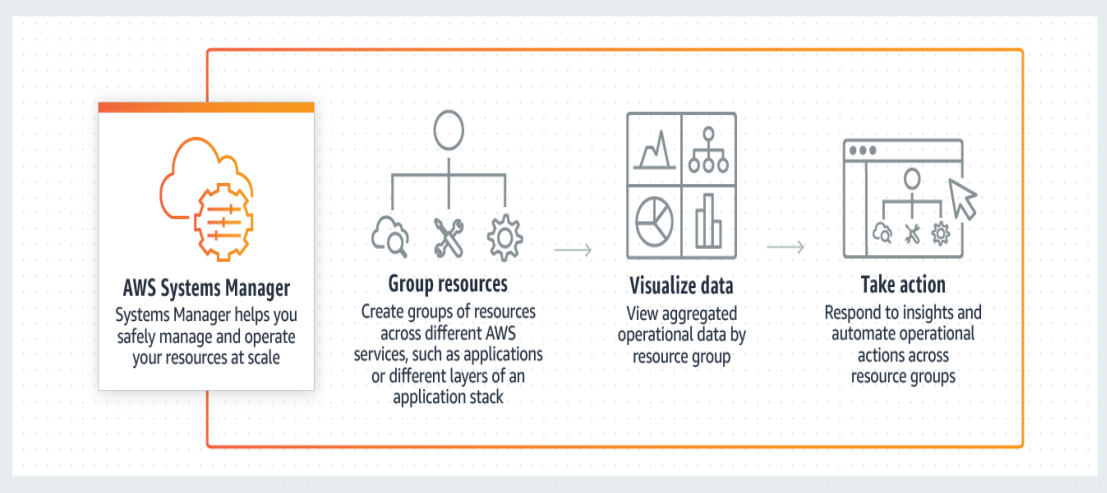
AWS continues to innovate on behalf of our customers

Monitoring in AWS



CloudWatch - monitor Windows workloads in AWS

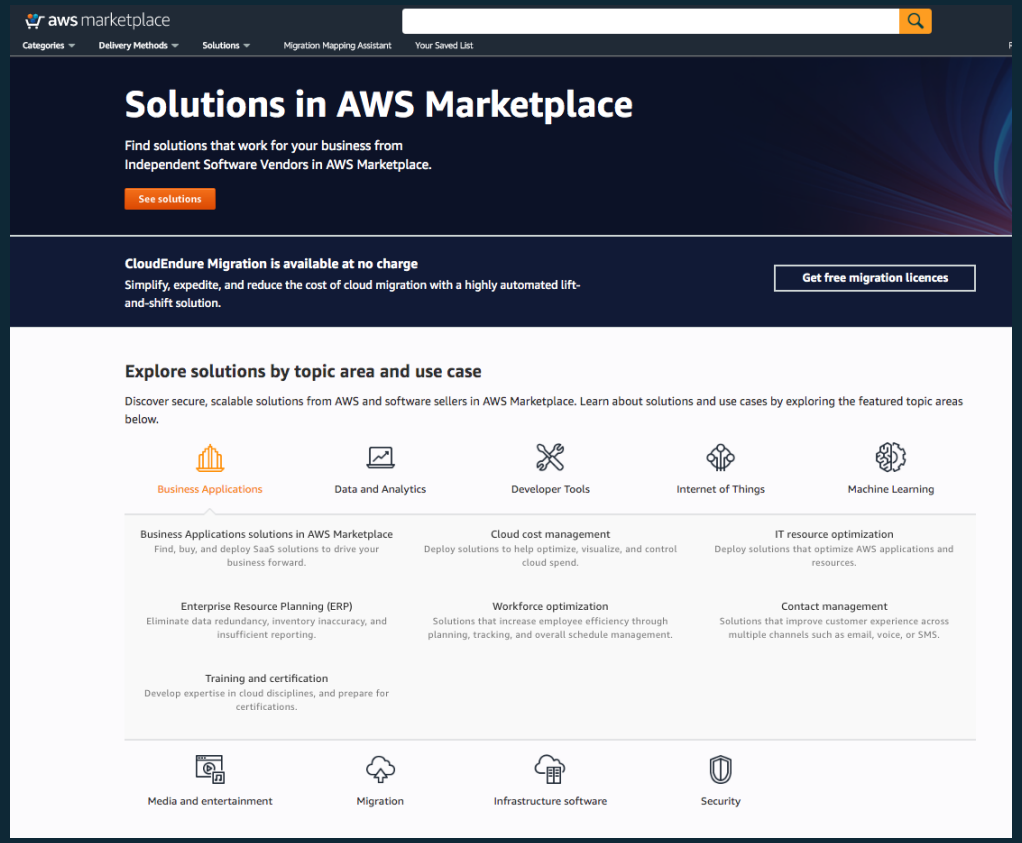
- Actionable insights to monitor application
- Respond to system-wide performance changes
- Optimize resource utilization
- Unified view of operational health



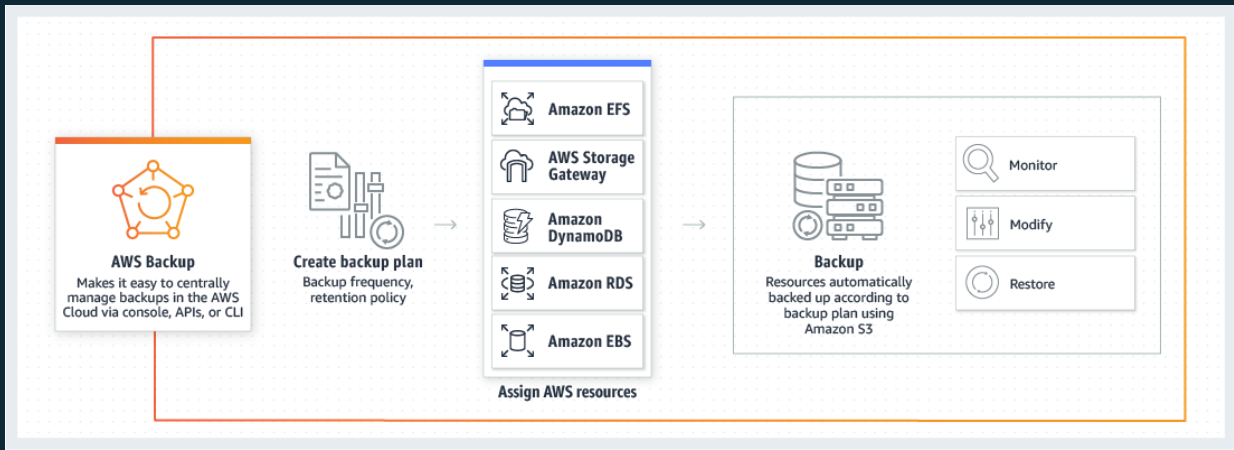
System Manager - maintain security and compliance

- Scanning managed instances
- Reporting on (or taking corrective actions)
- Visibility and control of cloud and on-prem
- Automates patching of Windows managed instances

Backup in AWS

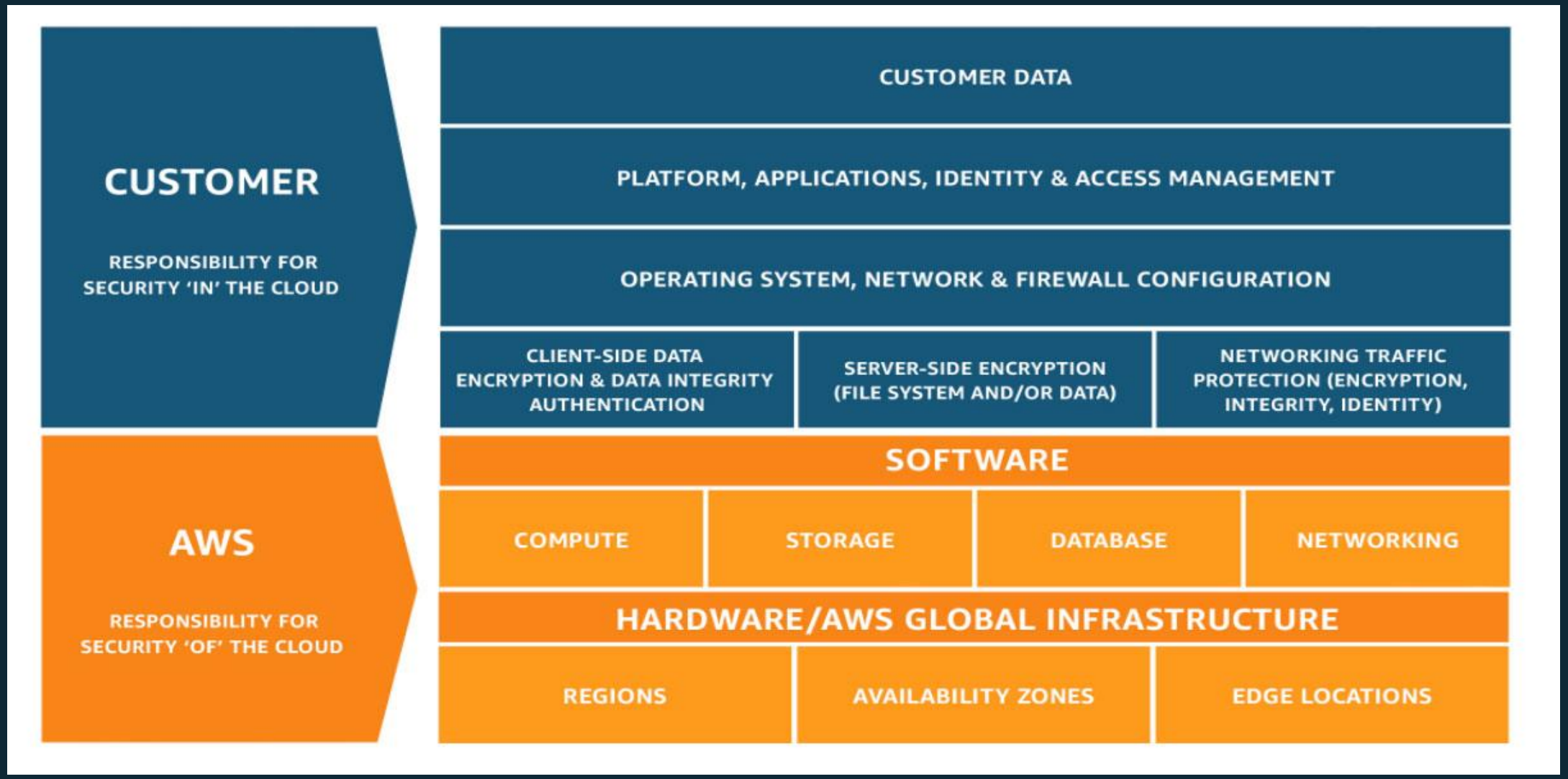


AWS Marketplace
- Backup and data management solutions
- Many existing solutions have AWS cloud variants



AWS Backup key features
- Centrally manage backup
- Automate backup processes
- Improve backup compliance
- Supports multiple data sources
- Cloud-native and hybrid backup support
- On-premises backup (with storage gateway)

AWS shared responsibility model



Summary

- Introduction of Windows workloads on AWS
- Introduction to AWS and pace of innovation
- How to get started on AWS cloud
- Discussed infrastructure overview from on-prem to cloud
- Covered key AWS foundations for compute, networking, security, storage and backup.

aws

Thank you