



SUMMIT
ONLINE

T R A 0 8

VMware cloud on AWS: Migrate and innovate at speed

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Amazon Web Services APJ

Agenda

What is hybrid cloud

VMware Cloud on AWS

Customer Stories

AWS service integrations

AWS Outposts

Summary and next steps

What is hybrid cloud?

Hybrid cloud stats

75%

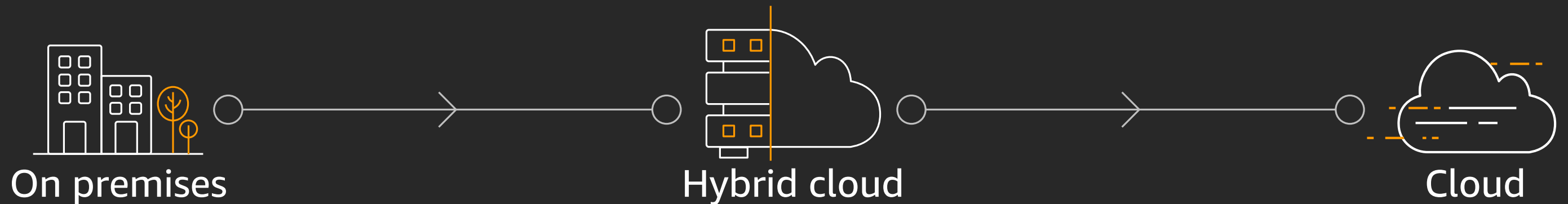
Enterprise applications
that are still on premises

71%

Organisations with
hybrid deployments

\$96B

Est. size of the hybrid
market by 2023



Sources: IDC, RightScale, Forrester, Markets & Markets

Why AWS for hybrid cloud



Broadest and deepest set of services



Best solutions for VMware workloads



Same infrastructure and services available on premises



Larger and more reliable global footprint



Encryption offered across 5x more services



Best hybrid solutions for disconnected environments

Family of hybrid services

Data center extension



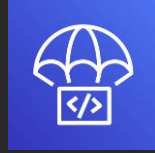
AWS Storage Gateway



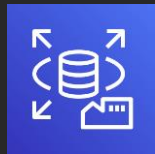
Amazon VPC



AWS Direct Connect



AWS CodeDeploy



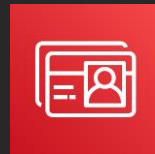
Amazon RDS on VMware



AWS Systems Manager



AWS OpsWorks



AWS Directory Service

VMware cloud migration



VMware Cloud on AWS

Cloud services on premises



AWS Outposts

Disconnected environments



AWS Snowball Edge

VMware cloud on AWS

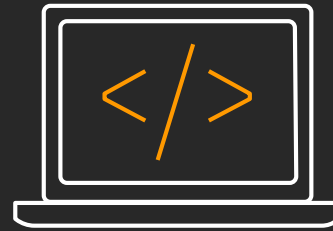
Customers want the **same** experience across on-premises and the cloud



Same reliable,
secure, and high-
performance
infrastructure



Same
operational
consistency



Same services
and APIs

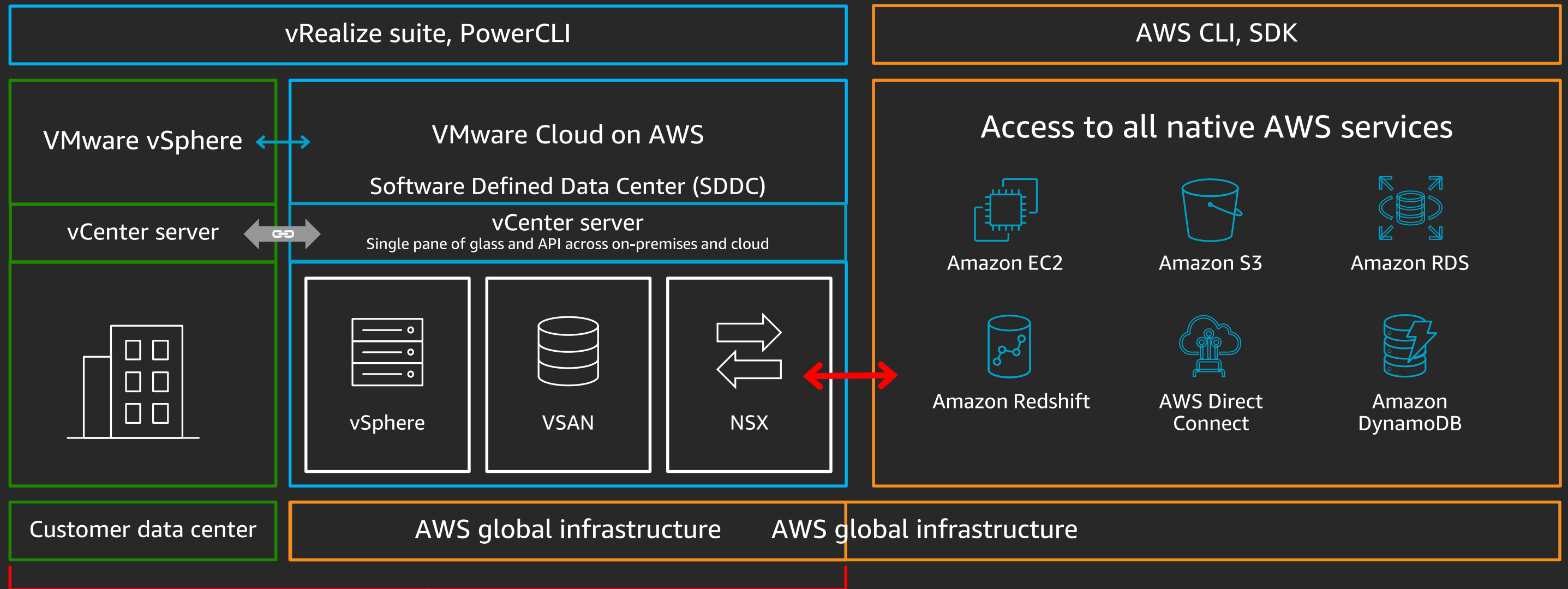


Same tools for
automation,
deployments,
and security
controls

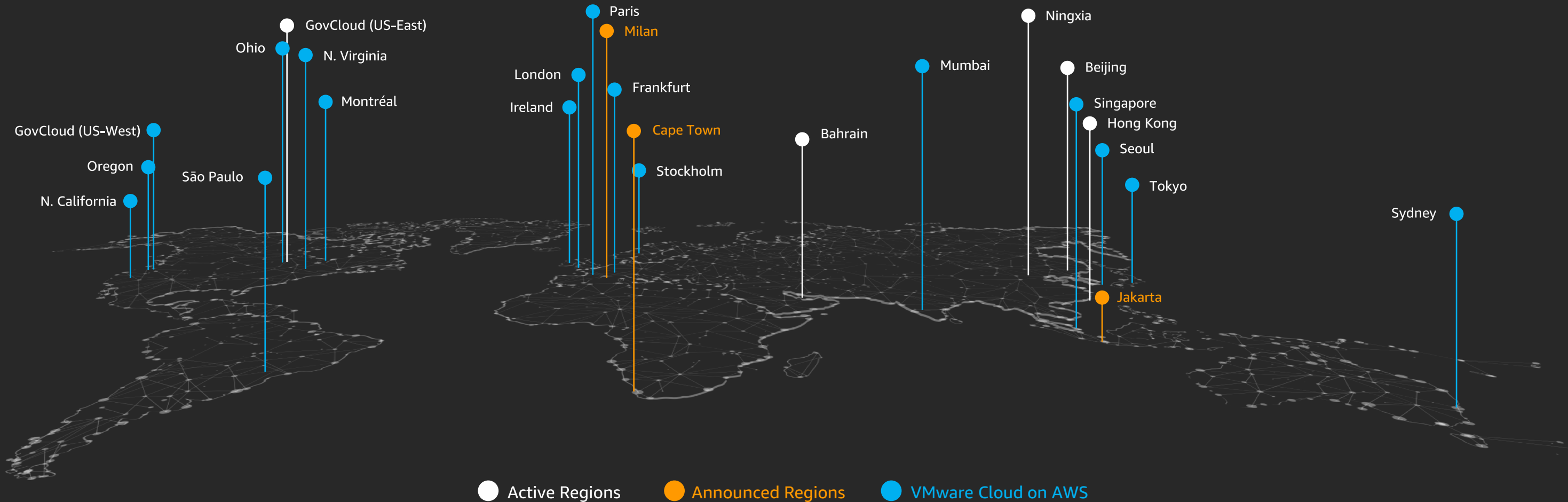


Same pace of
innovation as in
the cloud

VMware cloud on AWS overview



AWS global infrastructure



69 availability zones within 22 geographic regions
17 regions with VMware Cloud on AWS

Customer Stories

Migrated entire VDI infrastructure to the cloud

The challenge

- Plan to exit two data centers by the end of 2020
- Stopped purchased new hardware since 2017
- Focus on cost reduction and scalability

The solution

- Virtual Desktop Infrastructure (VDI) with VMware Cloud on AWS
- AWS ProServe support to accelerate lift-and-shift to VMware Cloud on AWS
- Managed database services - Amazon Aurora, Redshift, and Textract and all new application development will undergo a modernization effort with the use of AWS serverless technologies.

Business outcome

- Increased agility by being able to spin up hundreds of users in minutes, rather than months
- Enabled 7 figure increase in business by being able to quickly react to increases in demand
- Reduced desktop login times by 10x



~4500

Desktops to be migrated by
end of 2020

Philips provides better healthcare with VMware Cloud on AWS

The challenge

- Philips Healthcare has a need to evacuate datacenters around the world to AWS to reduce infrastructure and operations costs
- Needed to eliminate data silos and facilitate innovation in healthcare
- Improve response times from months to minutes for lines of business to allow for scale, innovation acceleration

The solution

- VMware Cloud on AWS to support re-host to the cloud and a new operational model for rapid deployment
- Other AWS services that Philips is considering: Outposts for VMware

Business outcome

- Philips believes VMware Cloud on AWS will help to break down data silos and facilitate the innovation required to achieve seamless, connected, and collaborative care that fulfills the 4 Ps of Digital Health: Precise, Personal, Predictive, and Proactive.
- Dramatic and measured improvement of time to value for LOB's

The Philips logo, consisting of the word "PHILIPS" in a bold, blue, sans-serif font, is displayed within a white rectangular box.

Moved entire Disaster Recovery infrastructure to VMware Cloud on AWS

The challenge

- Inadequate on-premises DR site
- Needed a scalable and very reliable DR solution

The solution

- Two-Tiered approach to DR
- Leverage VMware Site Recovery Manager (SRM) and VMware Cloud on AWS for mission-critical workloads
- Leverage Veritas NetBackup and Amazon S3 for non-mission critical workloads and rehydrate to VMware Cloud on AWS

Business outcome

- Able to build end-to-end DR infrastructure from on-premises to AWS
- Successfully implemented DR with multi-tier applications including Microsoft SQL
- Achieved end-to-end failover time within 12 minutes (RTO) with no IP change for 17VMs including AD, Citrix, and SQL



12 mins End-to-End failover time

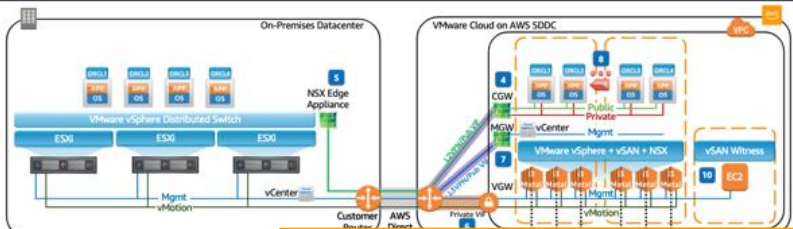
Opening a new world of AWS service integrations

Leveraging 190+ AWS services

Oracle RAC on VMware Cloud on AWS

Native Services Integration: Elastic Beanstalk, Elastic File System, and S3

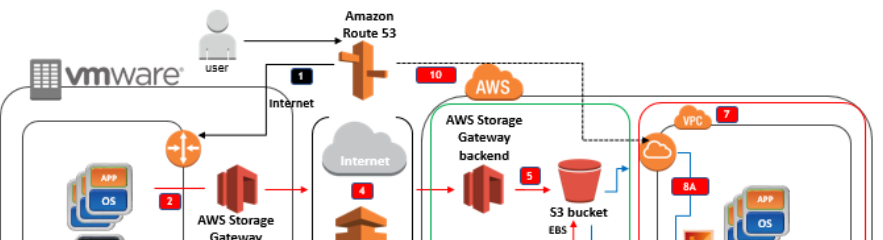
Live vMotion vSphere workloads to the Cloud without downtime and integrate them with Cloud Native Services.



Description

- 1 DNS requests are handled by Amazon Route 53, a highly available domain name system (DNS) service.
- 2 An alias record resolves to an active AWS Elastic Beanstalk environment: BLUE or GREEN.
- 3 Application servers natively communicate with VMware Cloud on AWS via VMware Cloud ENI route table entries.
- 4 VMware Compute Edge Gateway maintains route table for all NSX Logical Networks via Cross Account Identity and Access Management Role.
- 5 NSX Logical Networks extended on-premises via L2VPN between CGW and an NSX Edge Appliance, routed over DX Public Virtual Interface providing support

Pilot Light on VMware Cloud on AWS

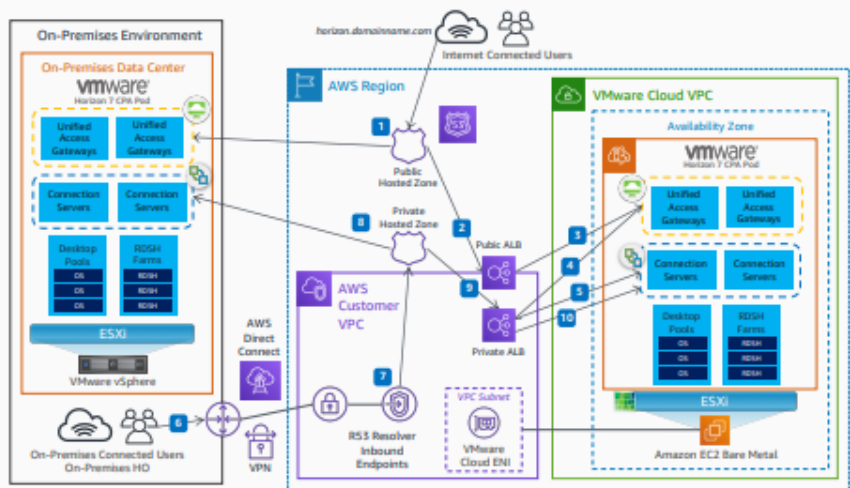


MGW VMware NSX Management Edge Gateway
CGW VMware NSX Compute Edge Gateway
VFW Amazon Virtual Private Gateway
VIGW Amazon Virtual Internet Gateway
EC2 Amazon Elastic Compute Cloud
S3 Amazon Simple Storage Service
VPC Amazon Virtual Private Cloud
ENI Amazon Elastic Network Interface
Public NSX Overlay VXLAN Segment
Private NSX Overlay VXLAN Segment
Management VIF
Private VIF
Public VIF

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Load Balance a Hybrid Horizon Environment on VMware Cloud on AWS

One example of how to configure load balancing for a hybrid Horizon environment across an on-premises environment and a VMware Cloud on AWS environment.



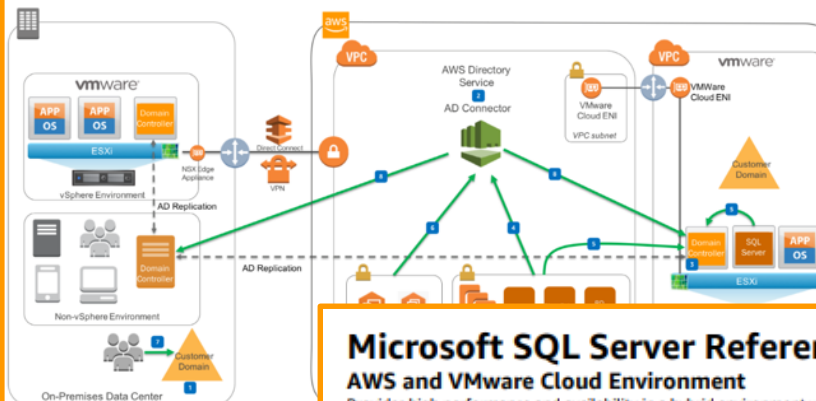
Minutes
O: ~4-6H
Cost: \$\$

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Hybrid Active Directory Stretched Domain

Using AWS Directory Service AD Connector

This architecture demonstrates a single Customer Domain stretched to the AWS and VMware Cloud on AWS. AWS Directory Service AD Connector proxies domain joins to a native domain controller and supports seamless domain join for AWS instances. Domain controllers can be placed on-premises, on AWS, or on VMware Cloud on AWS to optimize performance and high availability.



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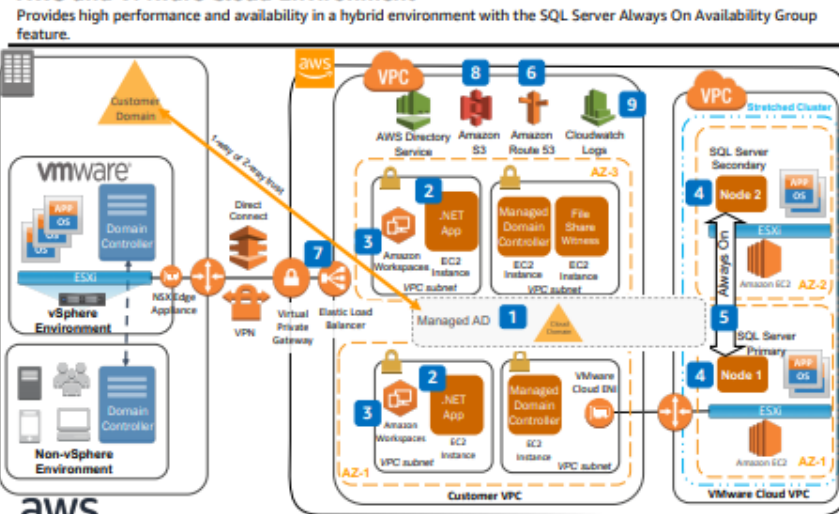
Description

- 1 Customer Domain is deployed on-premises with Users, Computers, and Group Policy as the AD source of identity.
- 2 AD Connector is provisioned to accept and proxy DC requests to domain controllers.
- 3 Member servers are deployed on VMC, joined to the Customer Domain across DX/VPN, promoted to DCs, and configured as an HA VMC AD Site for the cloud.
- 4 AWS instances are seamlessly joined to DCs in the cloud or on-premises through the AD Connector.
- 5 AD Connector connects AWS instances and VMware VMs to native domain controllers.
- 6 Amazon WorkSpaces users authenticate via AD Connector

Microsoft SQL Server Reference Architecture

AWS and VMware Cloud Environment

Provides high performance and availability in a hybrid environment with the SQL Server Always On Availability Group feature.

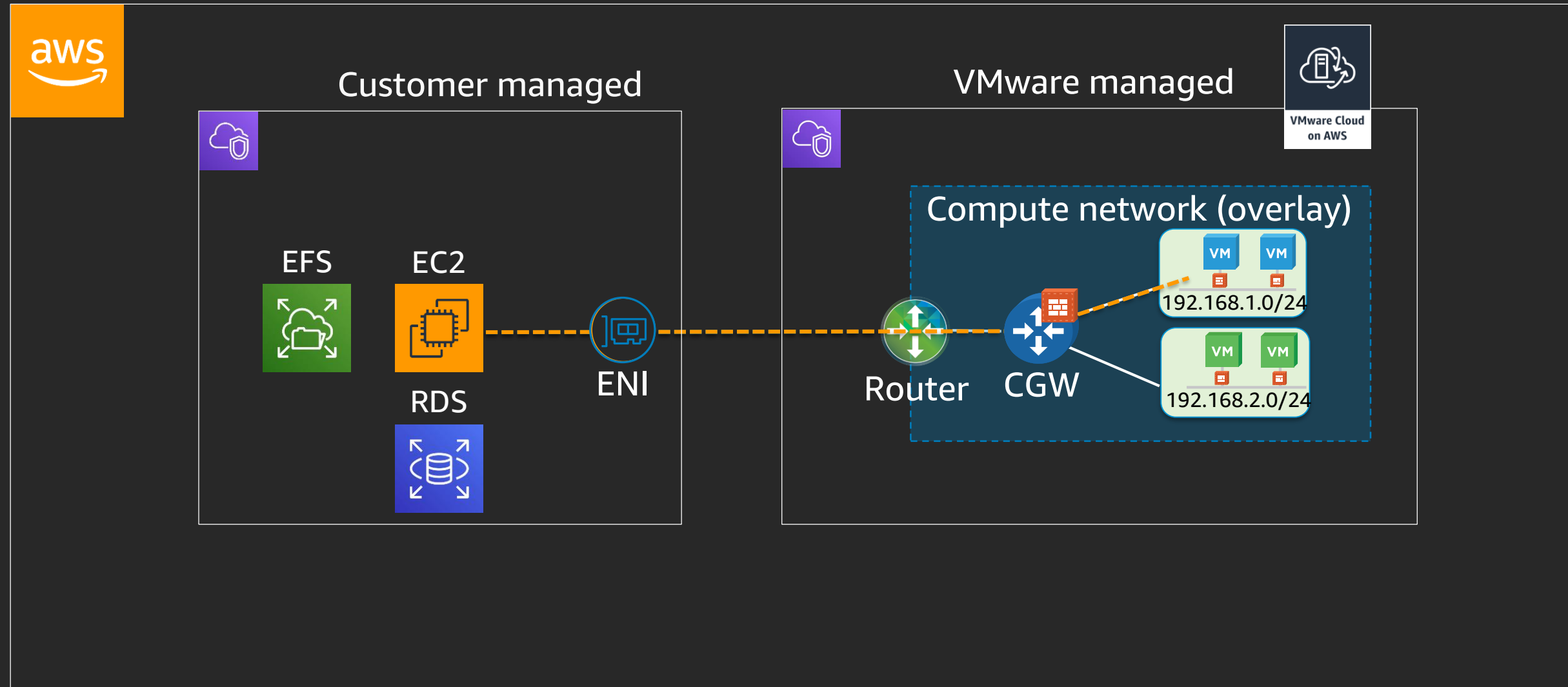


AWS Reference Architecture

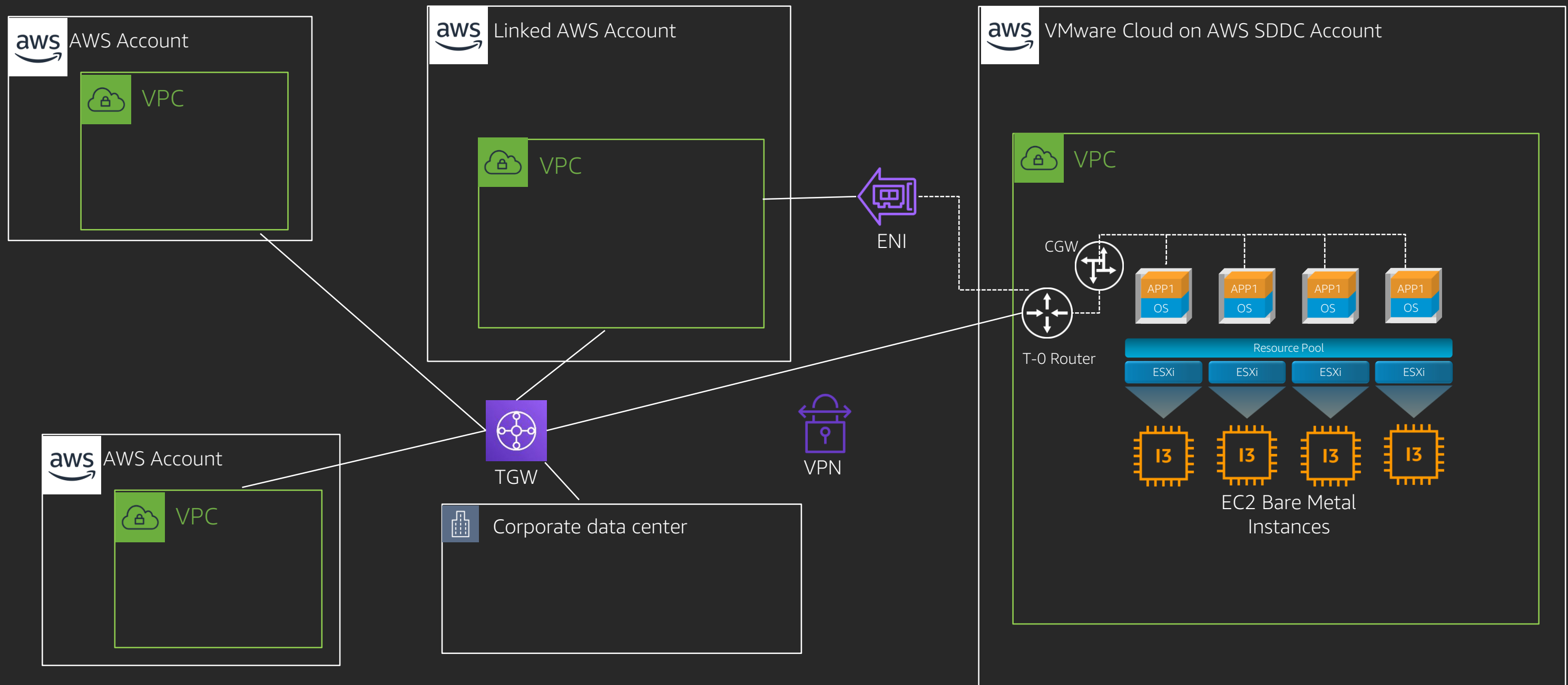
Description

- 1 AWS Directory Service for Microsoft Active Directory (AWS Microsoft AD) provides a managed AD for the Customer VPC and the VMware Cloud VPC.
- 2 .NET applications are seamlessly domain-joined and multi-AZ.
- 3 Users of Amazon Workspaces have their cloud desktops seamlessly domain-joined.
- 4 Microsoft SQL Server is deployed on VMware Cloud VPC with local NVMe SSDs.
- 5 The SQL Server Always On Availability Group feature is deployed on a stretched cluster in an availability group.
- 6 Route 53 updates the DNS A record of the listener from Primary to Secondary (or vice versa) in the event of a failover.
- 7 An Elastic Load Balancer distributes traffic across multi-AZ .NET applications.
- 8 Amazon S3 is used to back up SQL Server.
- 9 Cloudwatch is used to monitor and provide metrics on instances, the load balancer, and network devices.

AWS Services within a customer managed VPC



VPC connectivity with AWS transit gateway



AWS Outposts

AWS Outposts: Bringing AWS on premises



Same AWS-designed infrastructure as in AWS data centers (built on AWS Nitro System)



Fully managed, monitored, and operated by AWS as if in AWS Regions



Single pane of management in the cloud providing the same APIs and tools as in AWS Regions

Available in 2 variants

Native AWS (GA)

AWS APIs, services, and features.

Initially with:

- Amazon EC2 and EBS
- Amazon RDS
- Amazon ECS
- Amazon EKS
- Amazon EMR
- Application Load Balancer

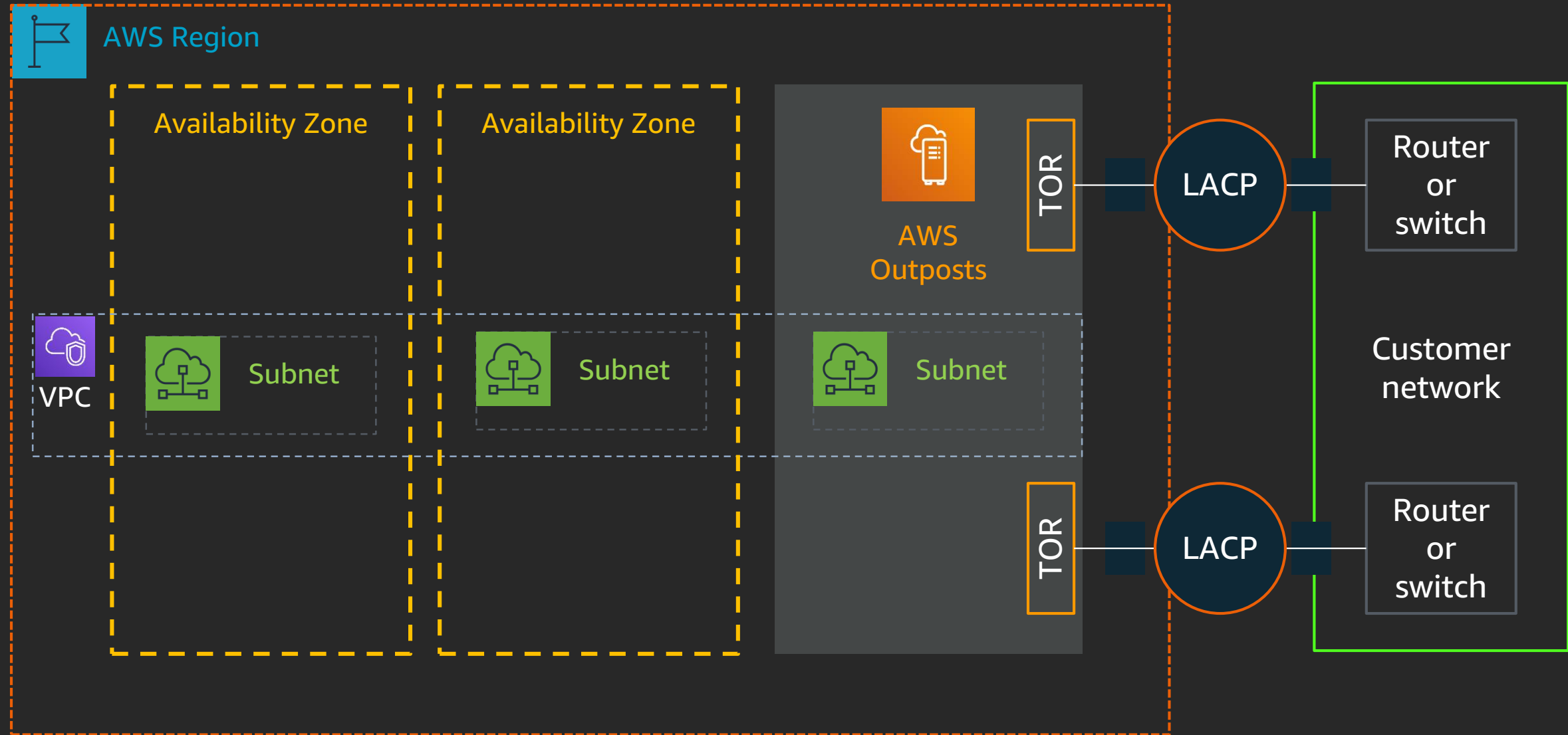
VMware Cloud on AWS (Beta)

VMware APIs and services

For customers running VMware
SDDC on-premises

Leverage existing skills, automation,
and governance policies

Seamlessly extend your regional VPC



Instances in the Outpost can securely talk to other instances in the VPC via private IP addresses

Amazon RDS on VMware

Amazon RDS on VMware

With same user experience as in AWS



Amazon RDS
vmware[®]

Automates provisioning, patching, backup & restore, scaling, and health management.



ORACLE[®]



Summary and next steps

VMware cloud on AWS target use cases

Cloud migrations



Business
Critical
Apps:



ORACLE

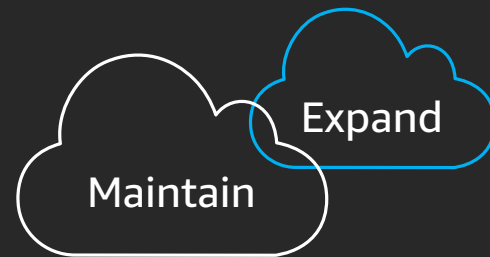


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Data center evacuation

Infrastructure refresh

Data center extension



Footprint expansion

On-demand capacity

Test/dev

Disaster recovery



Protect additional workloads

DR data center replacement

Add or modernise
DR solutions

Next-generation applications



Application modernization

Next-gen app build out

Enterprise workloads

Cloud value – more than TCO



**Cost Savings
(TCO)**



**Staff
Productivity**



**Operational
Resilience**



Business Agility



What is it?

Infrastructure cost savings/avoidance from moving to the cloud

Efficiency improvement by function on a task-by-task basis

Benefit of improving SLAs and reducing unplanned outages

Deploying new features/applications faster and reducing errors

← Typical focus →

← Most compelling cloud benefits →






Next steps

Unleash innovation while reducing IT cost

Define the change

Cloud adoption workshop

Align stakeholders and create a shared vision for business outcomes as you plan your migration.





 BUSINESS	 PLATFORM
 PEOPLE	 SECURITY
 GOVERNANCE	 OPERATIONS

Create a case

AWS business case service

Create a CFO ready business case that captures infrastructure cost savings and productivity gains.



Cloud Business Value Framework

	 Cost Savings (TCO)	 Staff Productivity	 Operational Resilience	 Business Agility
What is it?	Infrastructure cost savings / avoidance from moving to the Cloud.	Efficiency improvement by function on a task by task basis.	Benefit of improving SLAs & reducing unplanned outage.	Deploying new features / applications faster and reducing errors.
Examples	50%+ reduction in TCO (GE)	Over 500 hours per year of server configuration time saved (Sage)	Critical workloads run in multiple AZs & Regions for robust DR (Expedia)	Launch of new products 75% faster (Unilever)

Explore the service

Proof of value pilot

Programmatic white glove approach to determine and validate the use case and prove out on VMC.

	
SCENARIO 1: CONSOLIDATE & MIGRATE	SCENARIO 2: CREATE ASSETS WITH PARTNER WITH SOLUTION FOCUS
Data Center Consolidation	Dev, Test, Lab & Training
Application Migration	Cyclic Capacity

Thank you!

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