

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

WPS308-R

Use AWS GovCloud (US) to create resilient multi-Region architectures

Shawn Asfeld

Sr. Specialist SA, AWS GovCloud (US)
AWS

David Schatzman

Principal GTM Mgr., AWS GovCloud (US)
AWS



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Agenda

- Regulated market resiliency
- Why multi-Region?
- Multi-Region strategies

Resiliency workload tailoring considerations

Resiliency is critical

- It affects the quality of service your users experience
- It enables high-value assets and mission-critical workloads in the cloud
- It reduces concentration risk

Resiliency is complex

- It is an end-to-end discipline that must be built in
- It cannot be bolted on later as an afterthought

Resiliency is a key cost driver

- How many sites, how many data copies – drives cost in multiples (2x, 3x, etc.)

Resiliency in the cloud need not be the same as traditional IT

- Need to meet the same business objectives of availability and recovery
- There are better ways to address business continuity in the cloud



Regions architected for geographical resiliency



1

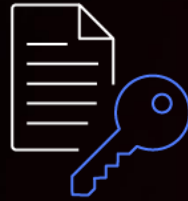
US-GOV-WEST-1

2

US-GOV-EAST-1



Facilitates resiliency in hyperscalability, high performance, and highly available architectures



Delivers resiliency for regulated workloads with specific compliance requirements



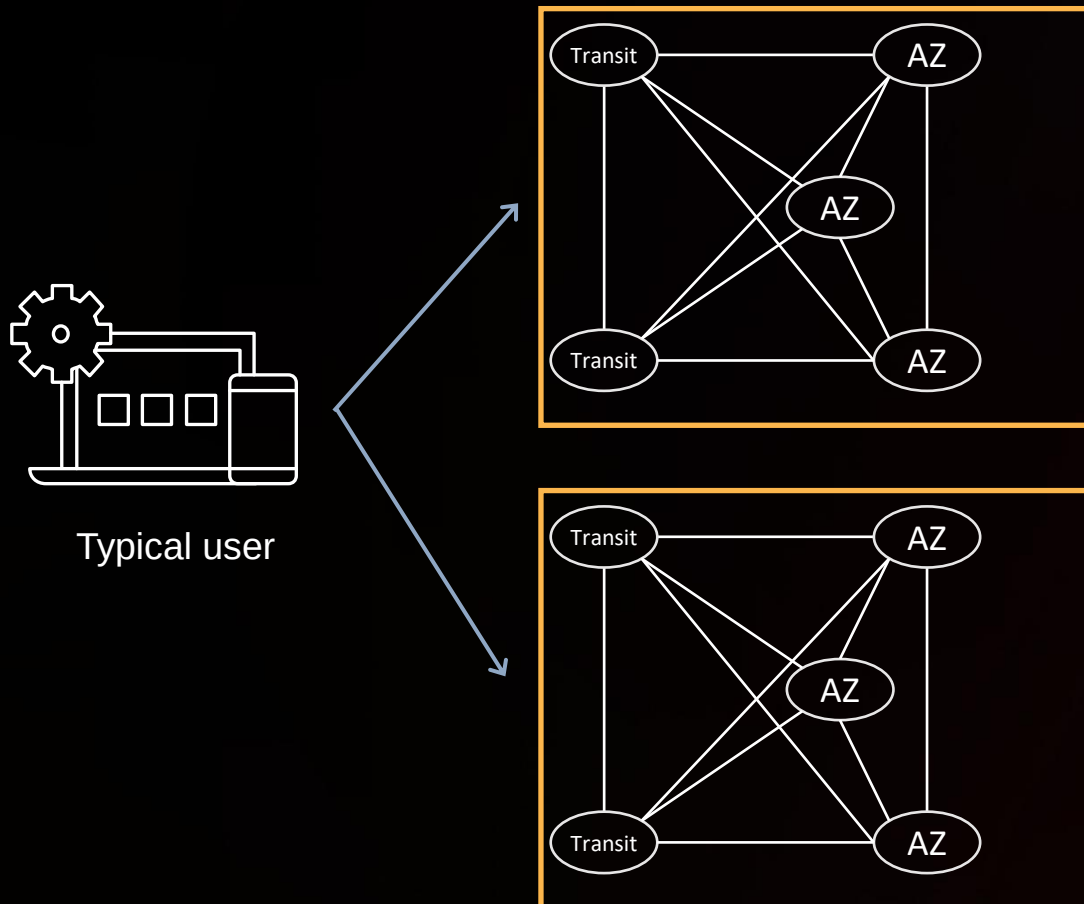
Drives resiliency for high-value assets, mission-critical workloads, and business-critical workloads

AWS GovCloud (US) offers 2 Regions and 6 total Availability Zones



AWS GovCloud (US) Region resiliency design

AWS GovCloud (US) Regions are fully isolated infrastructure; dual-Region architectures are possible to improve resiliency



Regions offer:

Fully redundant interconnections with high-bandwidth, low-latency networking over dedicated metro fiber; this provides high-throughput, high-reliability, low-latency networking

Flexibility to host highly resilient dual-Region deployments for high-value assets and mission-critical workloads

Business continuity

How much data can you afford to re-create or lose?

How quickly must you recover?

What is the cost of downtime?

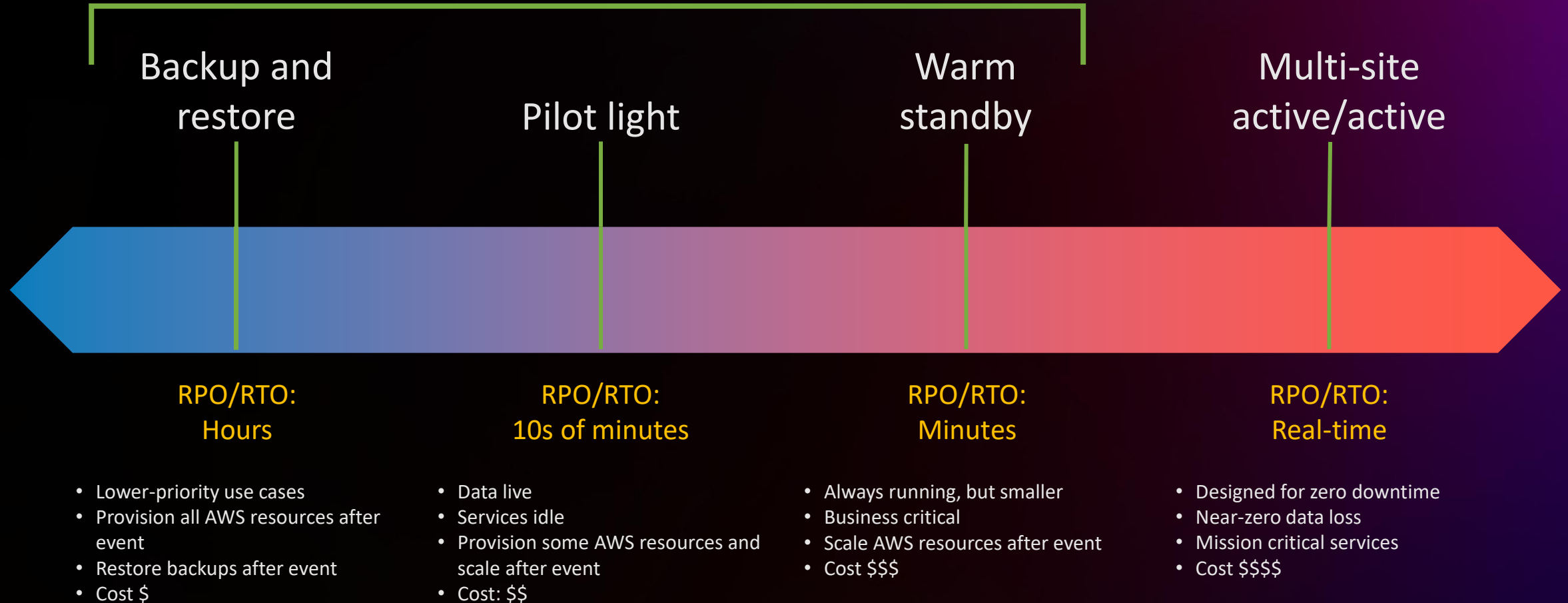
Recovery point (RPO)

Recovery time (RTO)

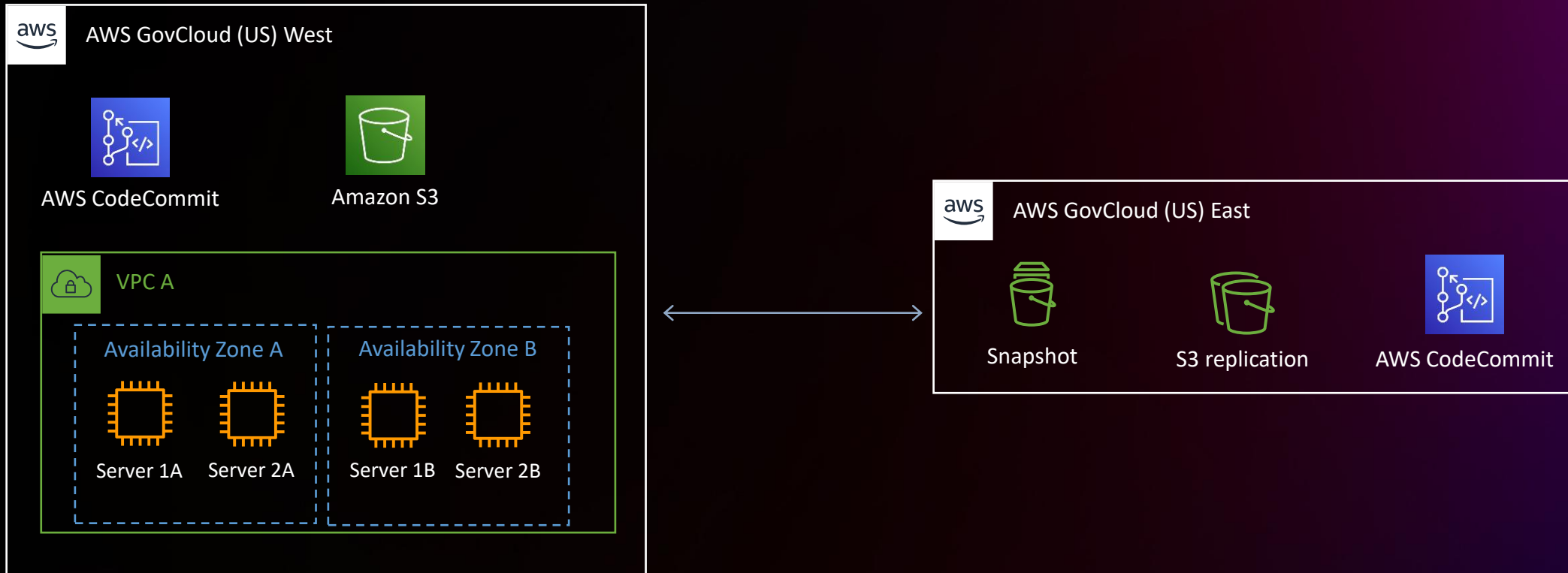


Strategies for disaster recovery

Active/passive



High availability is not disaster recovery



Landing Zone Accelerator on AWS

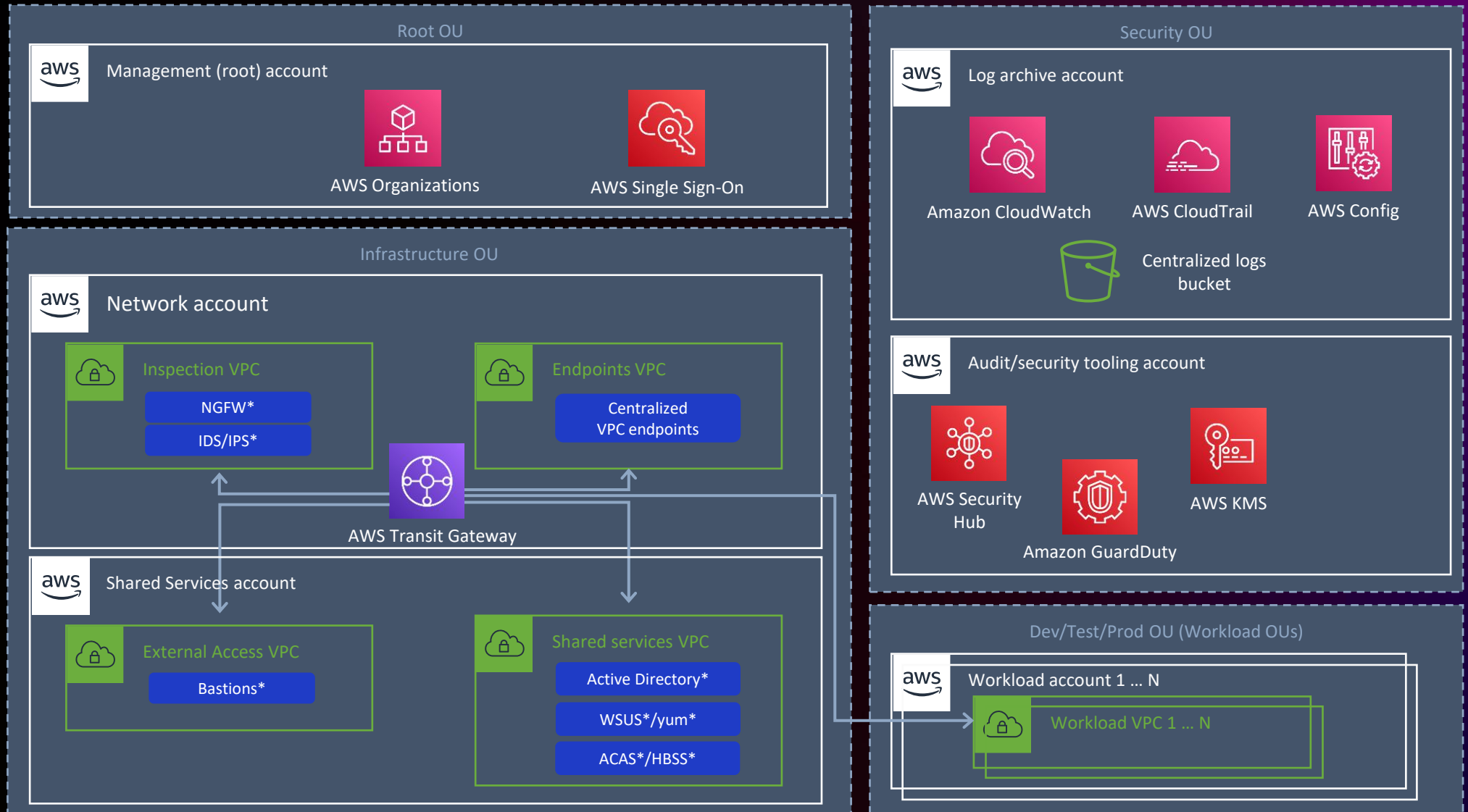
1. 
Installation template
(AWS CloudFormation)

2. 
Configuration files
(yaml)

3. 
AWS CodePipeline

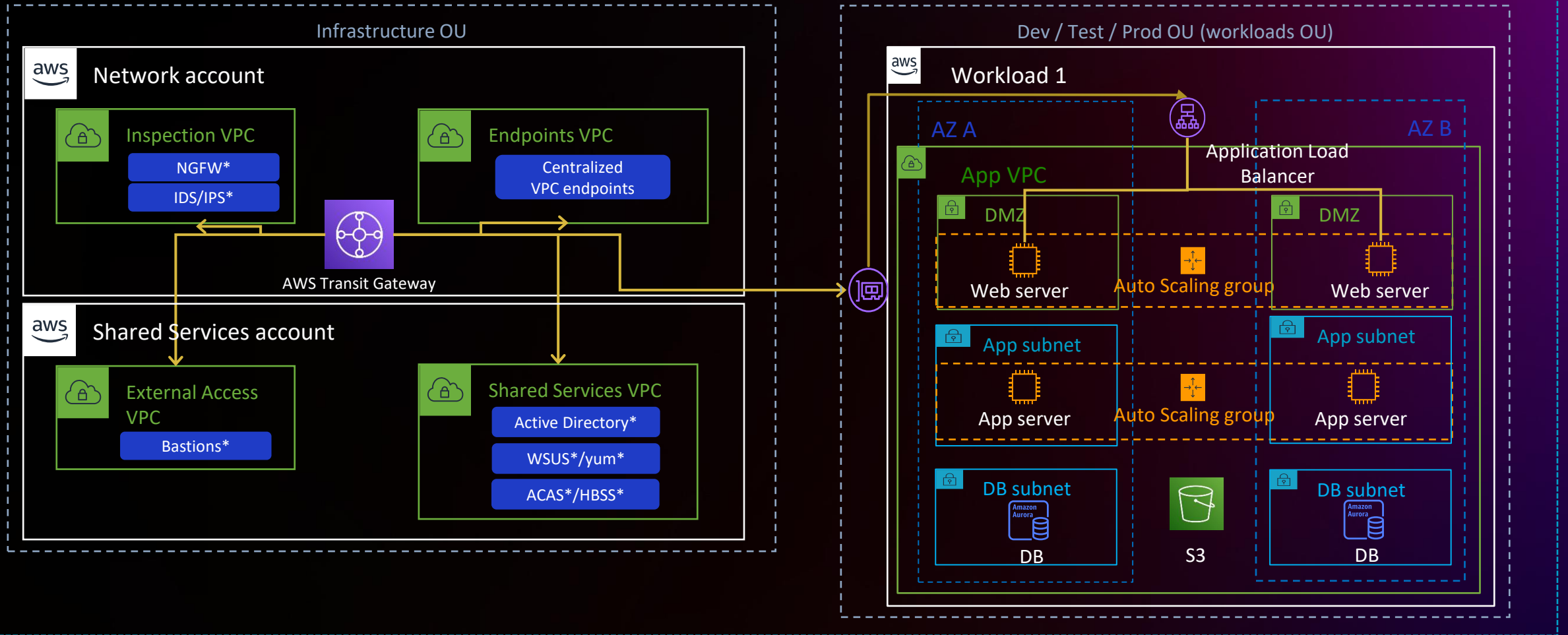
4. 
AWS Cloud
Development Kit (AWS
CDK)

Landing Zone
Accelerator



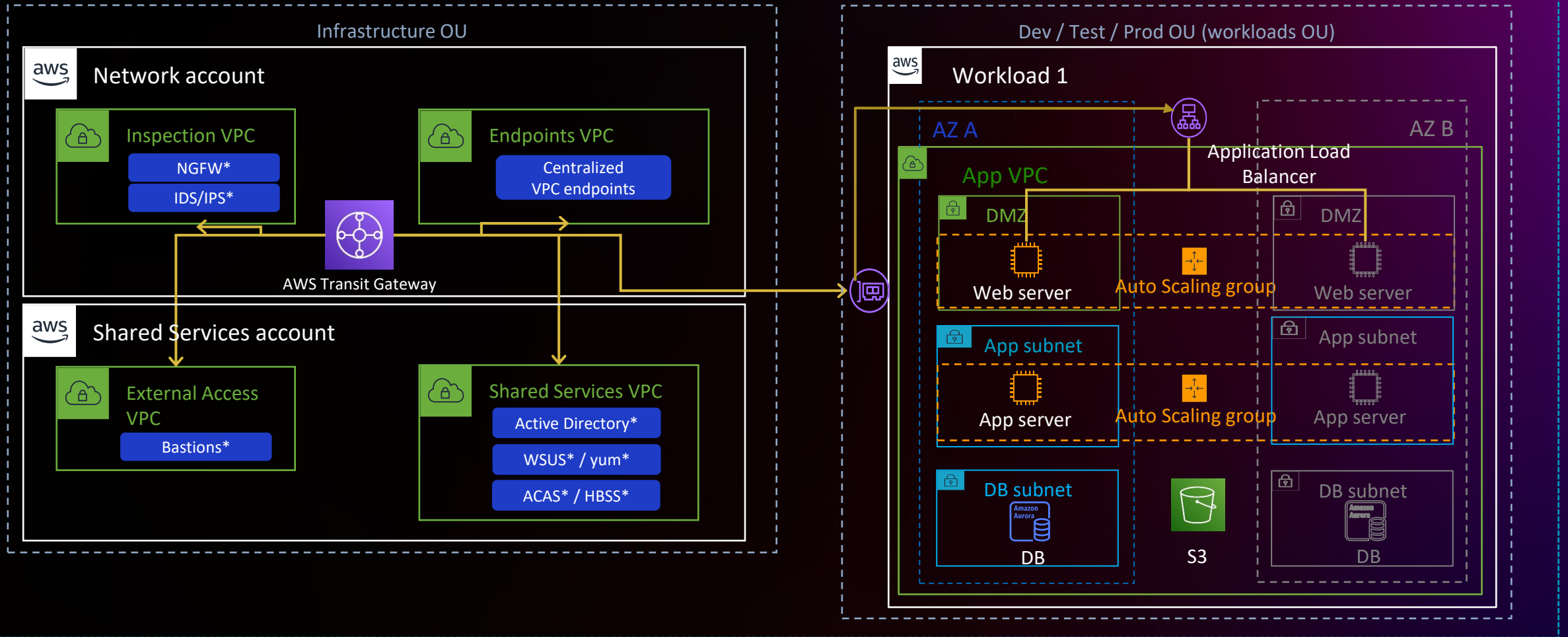


Primary

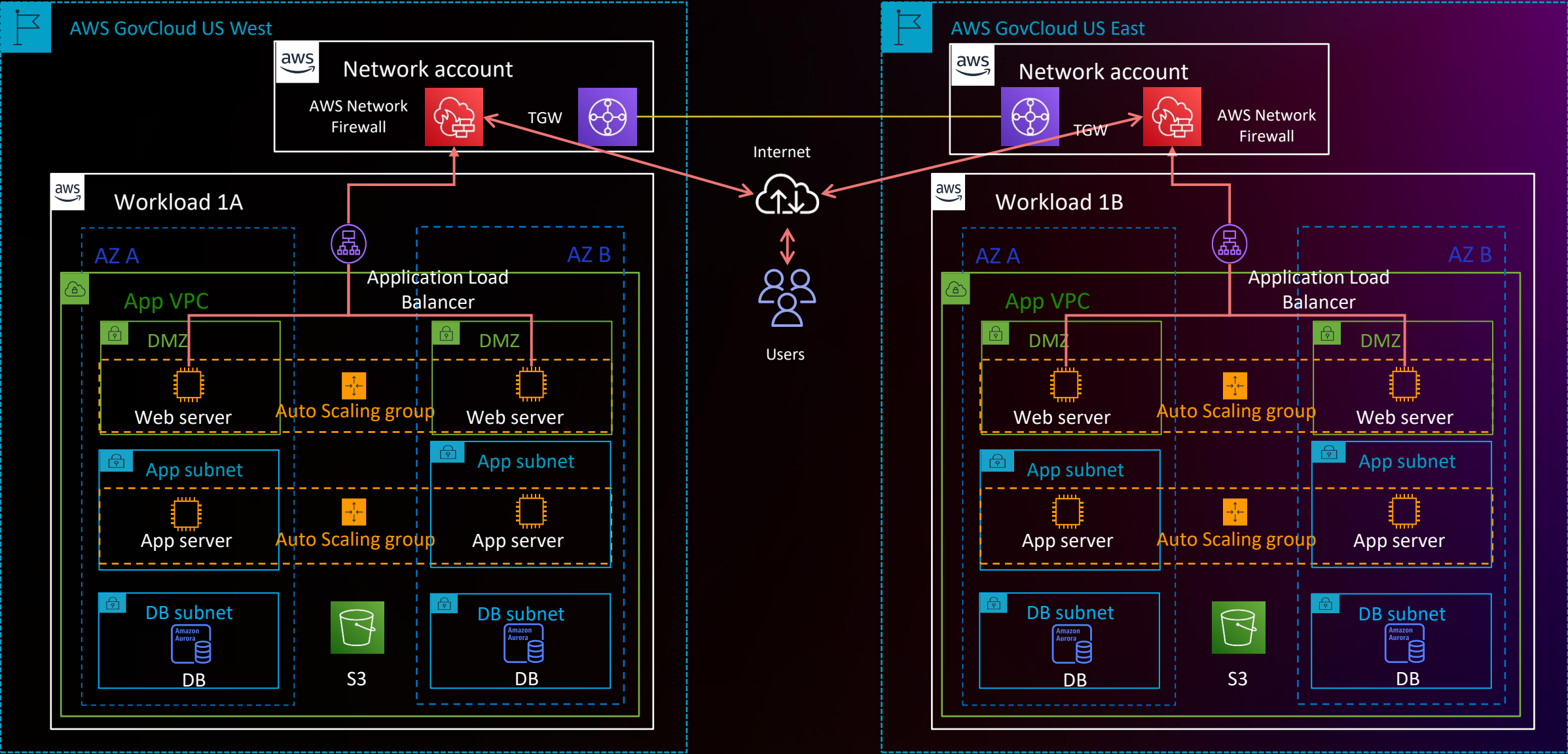




Warm standby



Multi-Region active-active



Eliminating single points of failure

1. **Re-create on failure** – Auto Scaling groups (ASG) and other deployment automation
2. **Server clustering** – Elastic Load Balancing (ELB)
3. **Database clustering** – Types of replicas and failover supported vary by platform
4. **Regional independence** – Any problem in one Region should not lead to failure of applications in another
5. **AWS managed services** – Offer many benefits in this area, as the redundancy and failover is often managed for you transparently
6. **Infrastructure as code** – Reliably and consistently provision and configure infrastructure

Key takeaways

- For reliability and high availability, use a multi-AZ architecture as a first step
- Applications built on AWS GovCloud (US) can handle extreme resilience requirements, but most applications do not require it
- AWS provides replication solutions for different data stores, such as Amazon DynamoDB global tables, Amazon RDS cross-Region read replicas, Amazon S3 cross-Region replication, etc.
- Test continuously for known scenarios; experiment for the challenge of unknowns
- Make sure you have healthy infrastructure as code (IaC), observability, and code deployment practices

References

Landing Zone Accelerator on AWS

<https://aws.amazon.com/solutions/implementations/landing-zone-accelerator-on-aws/>

AWS GovCloud (US) documentation

<https://docs.aws.amazon.com/govcloud-us/latest/UserGuide/welcome.html>

Reliability Pillar

<https://docs.aws.amazon.com/wellarchitected/latest/reliability-pillar/welcome.html>



Thank you!

Shawn Asfeld
sasfeld@amazon.com

David Schatzman
dschatzm@amazon.com



Please complete the session survey
in the **mobile app**



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.