Deliver low latency multiplayer games with AWS edge infrastructure

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Multiplayer Games

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Multiplayer Games

Global audience	Online gaming players will surpass 1.3 billion people by 2025.
Digital experience	83% of video game sales happen in the digital world.
Growth industry	12% CAGR between 2020 and 2025.
Edge device usage	Mobile game industry to reach $138 billion by 2025

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Latency in multiplayer gaming

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What is Latency?

Latency is the time that data takes to move across the network. Networks with a longer delay or lag have high latency, while those with fast response times have low latency. This time is measured in milliseconds (ms).

> **"87% of gamers are frustrated because of slow game downloads."**
>
> LimeLight

Transmission medium – Distance – Hops – Data Volume – Server Performance

causes of network latency

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Latency - a 2 part story

1. Personalized game delivery

Latency in content delivered to end users

Impacts game download speed

Impacts streamed media

2. Realtime Game Play

Latency from end user to game server

Impacts interactive use experience

Can cause an uneven playing field

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Reduce latency by moving traffic across **an optimized network**

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Game content delivery

Amazon CloudFront

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Amazon CloudFront

Securely deliver both dynamic and static content with low latency and high transfer speeds

Reduce latency by caching content closer to end users

Protect applications against DDoS attacks, bots, and malicious actors

Customize content delivered at the edge using serverless compute

Reduce costs with consolidated requests and zero transfer fees from AWS origins

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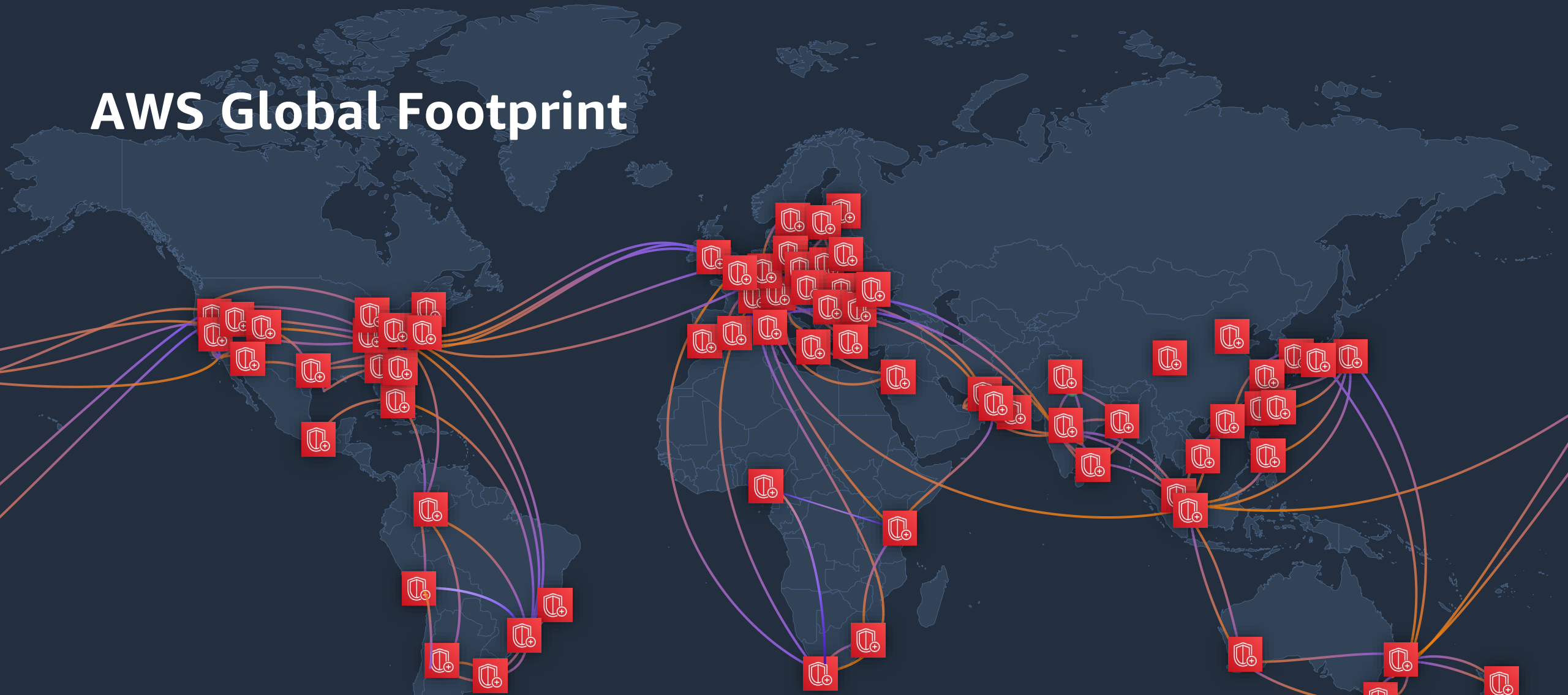
AWS Global Footprint



450+ CloudFront PoPs in 90 cities across 49 countries

104 Global Accelerator PoPs in 88 cities across 48 countries

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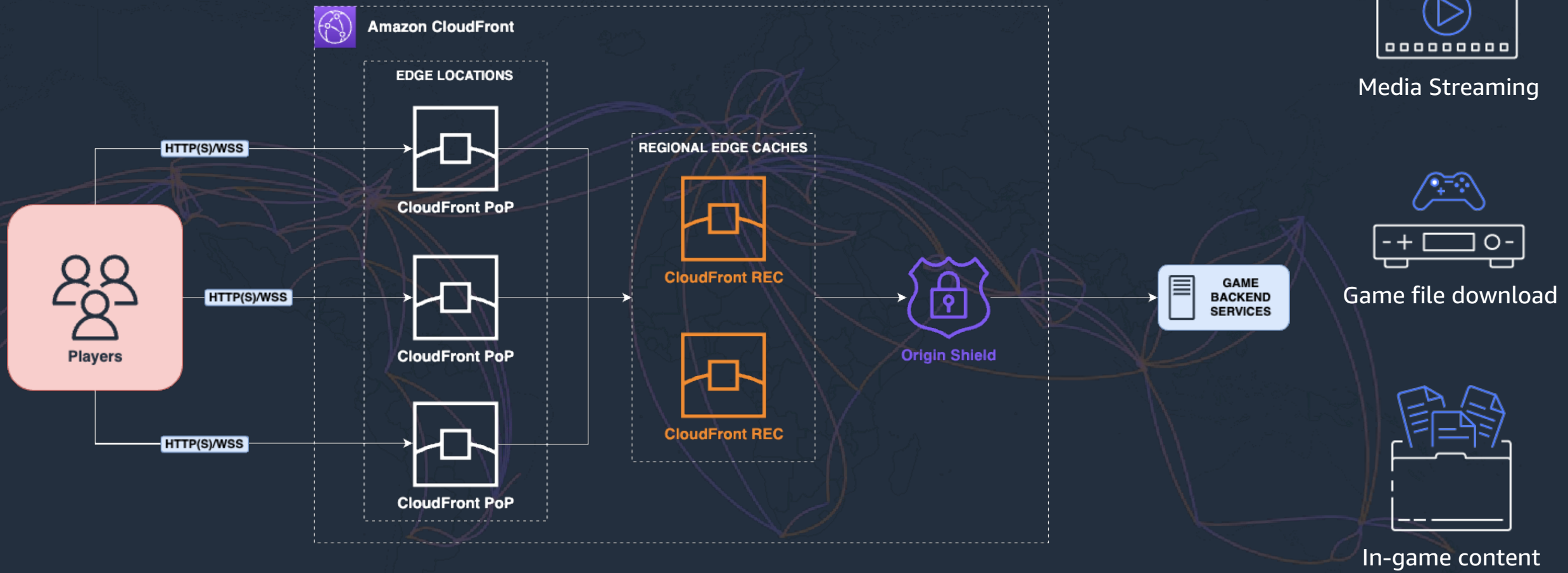
Amazon CloudFront – How it works



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Supercell Delivers Dynamic, Low-Latency Games to Millions of Players Using AWS Edge Services

Challenges

Supercell needs proactive security measures and deliver game updates regularly while maintaining an excellent player experience.

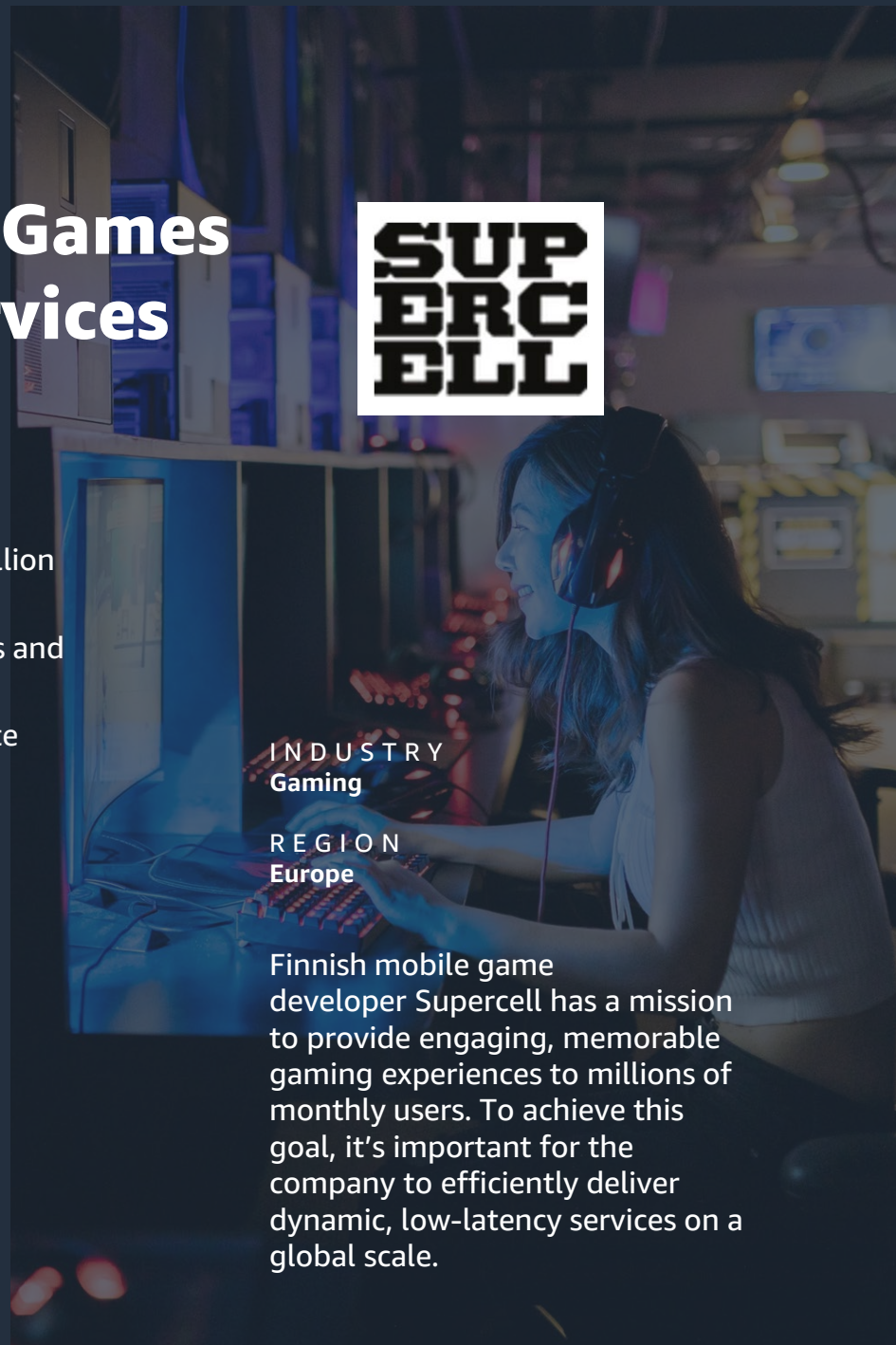
Solutions

Supercell uses Amazon CloudFront to distribute assets to players across all Supercell games. They also AWS Local Zones, a type of infrastructure deployment that places compute, storage, database, and other select AWS services close to large population and industry centers.

Results

- Scales to support 250 million monthly users
- Facilitates game launches and supports user upticks
- Helps small teams operate independently with lean engineering resources

> "Using AWS, we have a global presence and the ability to deliver our games with low latency all around the world."
>
> Mikael Paani
> *Cloud Governance Specialist, Supercell*



INDUSTRY
Gaming

REGION
Europe

Finnish mobile game developer Supercell has a mission to provide engaging, memorable gaming experiences to millions of monthly users. To achieve this goal, it's important for the company to efficiently deliver dynamic, low-latency services on a global scale.

Optimizing network paths

AWS Global Accelerator

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AWS Global Accelerator

Improve application availability, performance, and security using the AWS global network

Improve network performance for internet applications by up to 60%

Simplify traffic management with static IP addresses

Deliver highly resilient applications with fast failover for multi-Region and multi-AZ architectures

Secure applications from DDoS attacks

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Key features of Global Accelerator

Static IP addresses as fixed entry point to apps in a single or multiple AWS Regions

Improved performance for TCP and UDP traffic targeting ALBs, NLBs or EC2 instances

Traffic failover in less than 30 seconds from detection of unhealthy endpoint

Move endpoints between AZs and Regions with no change to clients or DNS config

All traffic traverses the AWS backbone*

Resilient to DDoS attacks due to larger bandwidth and traffic controls

* except within the People's Republic of China

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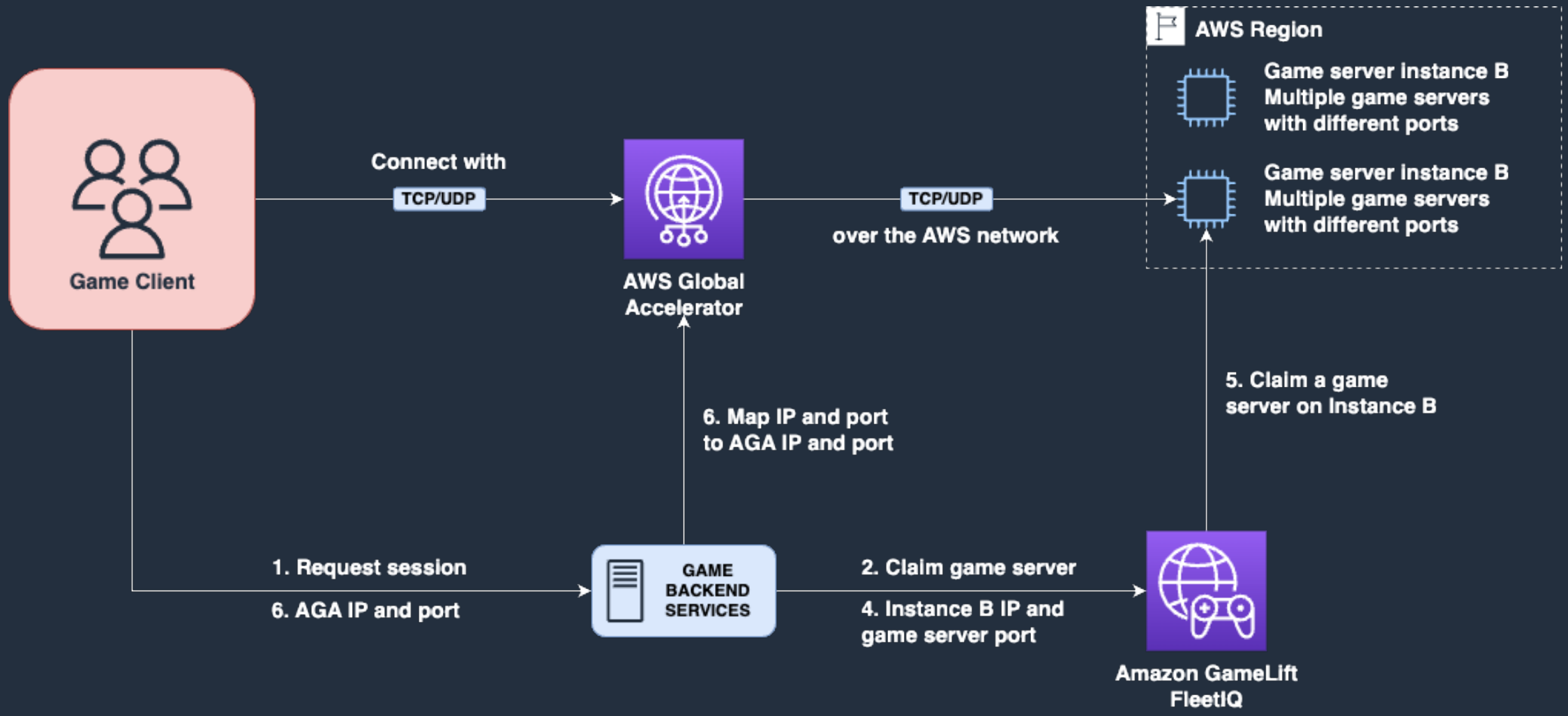
AWS Global Accelerator – How it works



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Realtime game play

AWS Local Zones

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AWS Local Zones

Meet latency, local data processing, and data residency* requirements in more locations, without deploying self-managed infrastructure

AWS deployed and operated infrastructure in large metro centers

Elastic, on-demand resources, with pay-as-you-go pricing

Same AWS core services and developer experience

Integrated with Region services through the AWS backbone

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Use cases

Latency-based

Improved performance for end users

- Gaming
- Social media
- Telecommunications

Location-based

Data residency

- Financial services
- Public sector

Enterprise migration and modernization

- Hybrid cloud migrations
- Modernization and innovation initiatives

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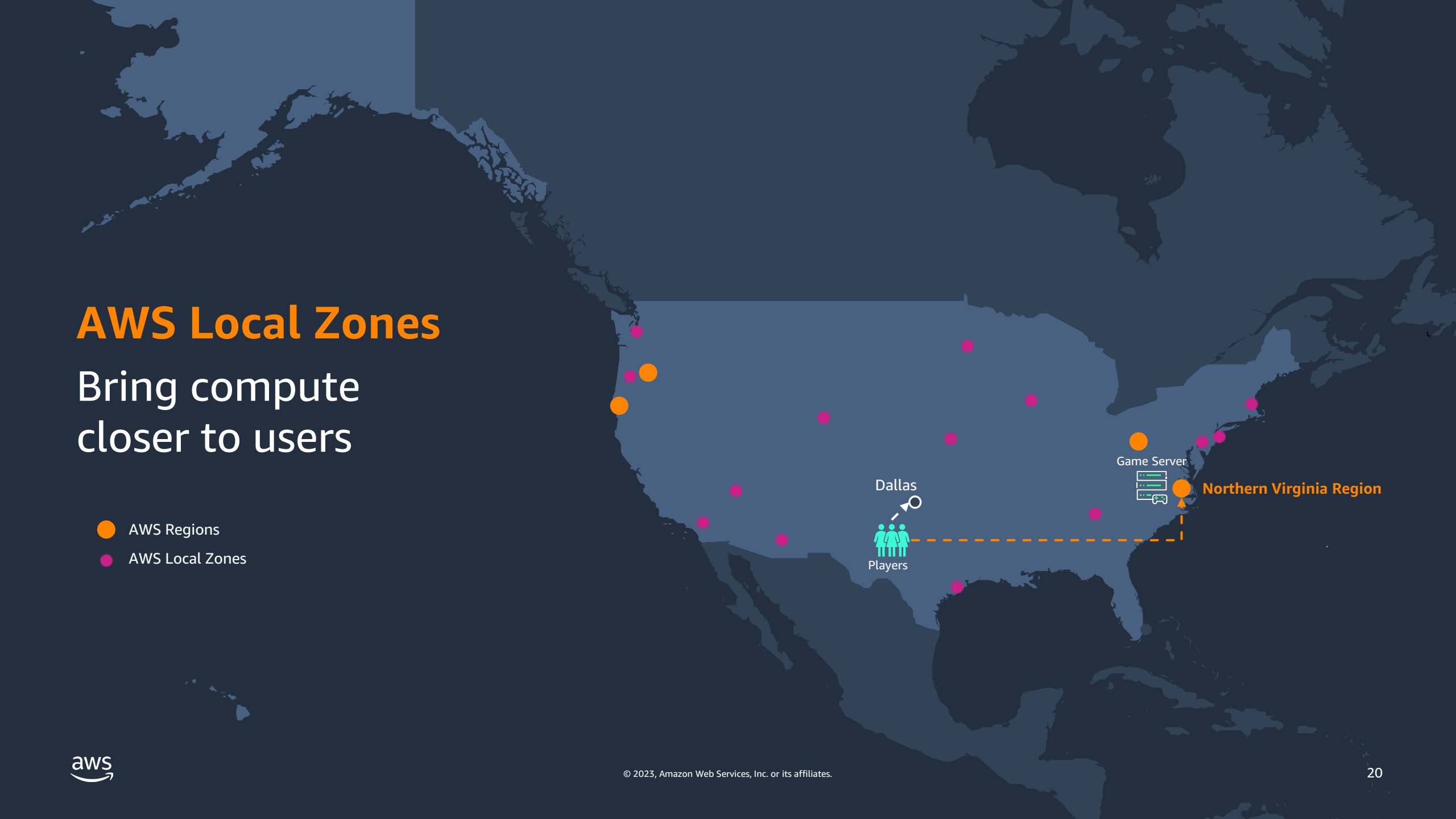
AWS Local Zones

Bring compute closer to users

- AWS Regions
- AWS Local Zones



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Local Zones expands AWS Infrastructure to 32 metros

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Epic Games

The challenge

Latency is the most critical part of the online gaming experience. Fortnite by Epic Games has millions of users worldwide and Epic Games were looking for ways to deliver low latency experiences to their players across North America.

Solution

Epic Games decided to deploy their NA Central game servers for their hugely popular Fortnite on the Dallas Local Zone. Players in United Sates and Mexico can now experience the game with low latency for a superior performance.

Business outcome

Improved experience for Fortnite players in North America and Mexico.

https://www.fortnite.com/news/announcing-the-na-central-server-region-for-fortnite

"Epic Games and AWS have worked together for over 10 years and continue to find new ways to leverage the full potential of the cloud. With the new NA-Central server region, powered by the AWS Local Zones in Dallas, Fortnite players in the central United States and Mexico can experience the best player experience through low latency gameplay."

Dan Carpenter, Director of the North American Games Segment at AWS

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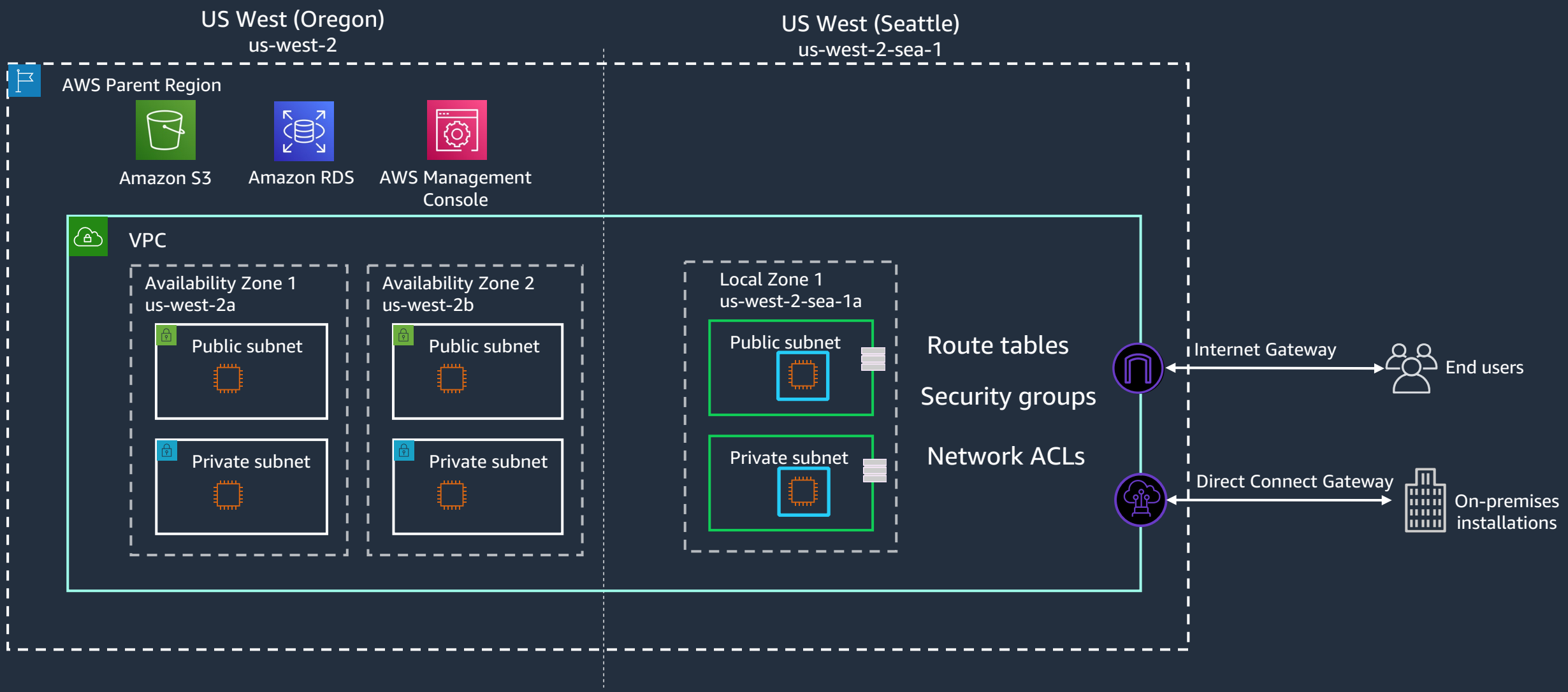
AWS Local Zones architecture



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Services available in All Local Zones

** Some services only available in select Local Zones*

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Services available in All Local Zones

Amazon CloudTrail

Amazon CloudFormation

Amazon EC2 Autoscaling

Amazon CloudWatch

Amazon S3

Amazon DynamoDB

** Some services only available in select Local Zones*

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AWS Infrastructure for Games

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AWS Global Infrastructure

AWS CloudFront

Deliver content Gaming using CloudFront reducing latency for game content, video streaming & download delivery.

Amazon CloudFront is a web service that speeds up distribution of your static and dynamic web content to your users using AWS Edge Locations.

AWS Local Zones

Deploy game servicers closer to end users for real time game play across a global audience

Local Zones expands AWS infrastructure bringing AWS services closers to millions of end users

AWS Global Accelerator

The Global Accelerator custom routing feature allows you to accelerate traffic to your game servers easily and effectively.

Take advantage of the performance, security, and availability of the AWS Global Infrastructure to onboard your user traffic at one of the Global Accelerator edge locations

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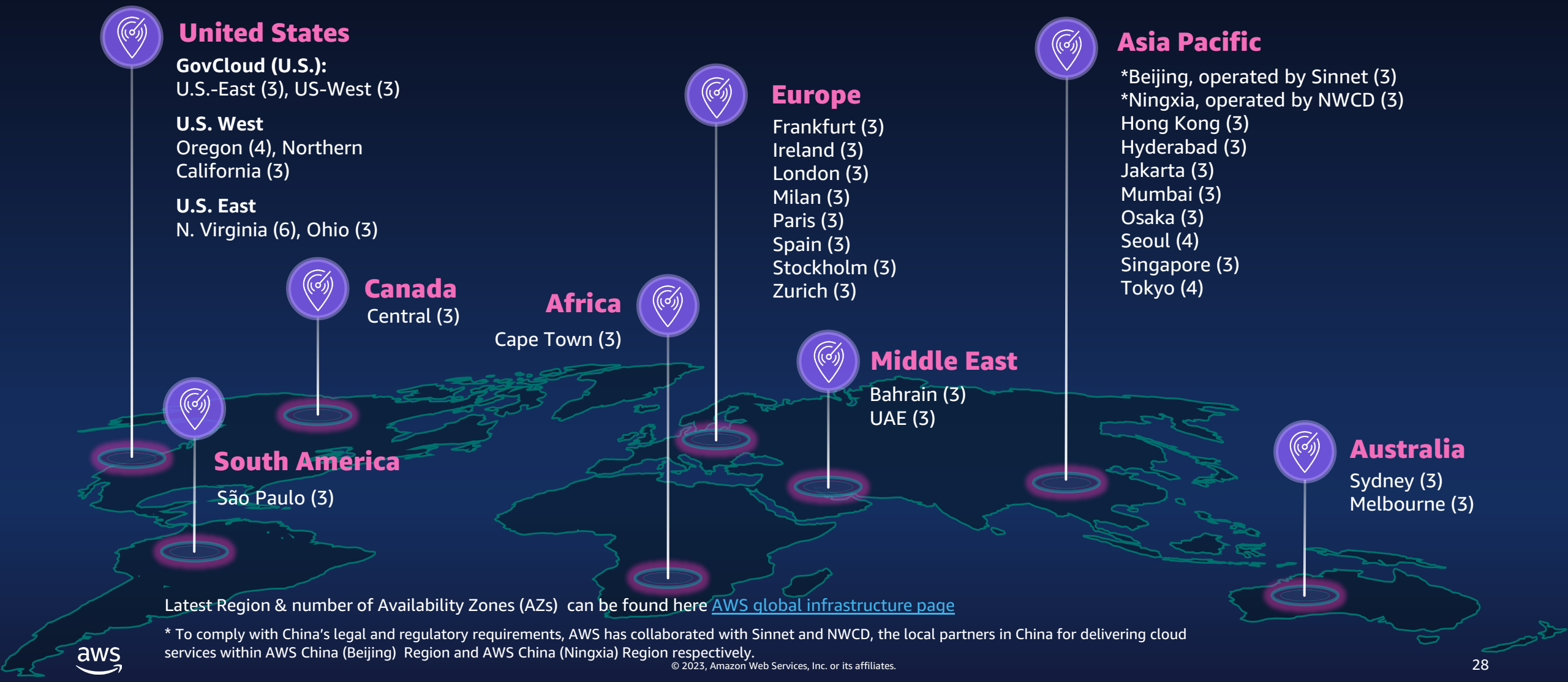
AWS Global Infrastructure

31 Launched Regions, 99 Availability Zones and 450+ Points of Presence



Latest Region & number of Availability Zones (AZs) can be found here [AWS global infrastructure page]

* To comply with China's legal and regulatory requirements, AWS has collaborated with Sinnet and NWCD, the local partners in China for delivering cloud services within AWS China (Beijing) Region and AWS China (Ningxia) Region respectively.

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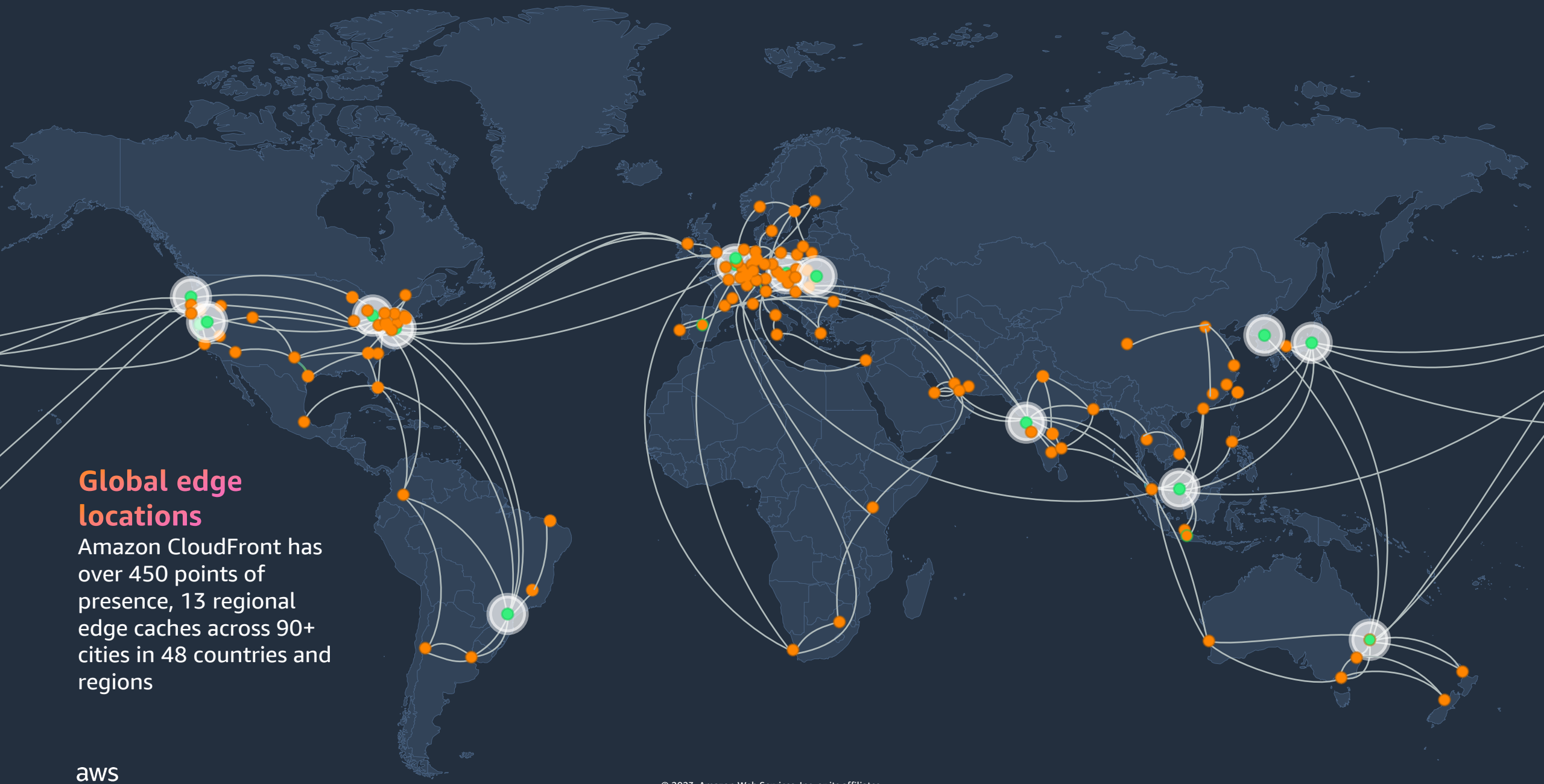

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Thank you!

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