AWS re:Invent

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NET321

Accelerating access to compute endpoints

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AWS Global Accelerator

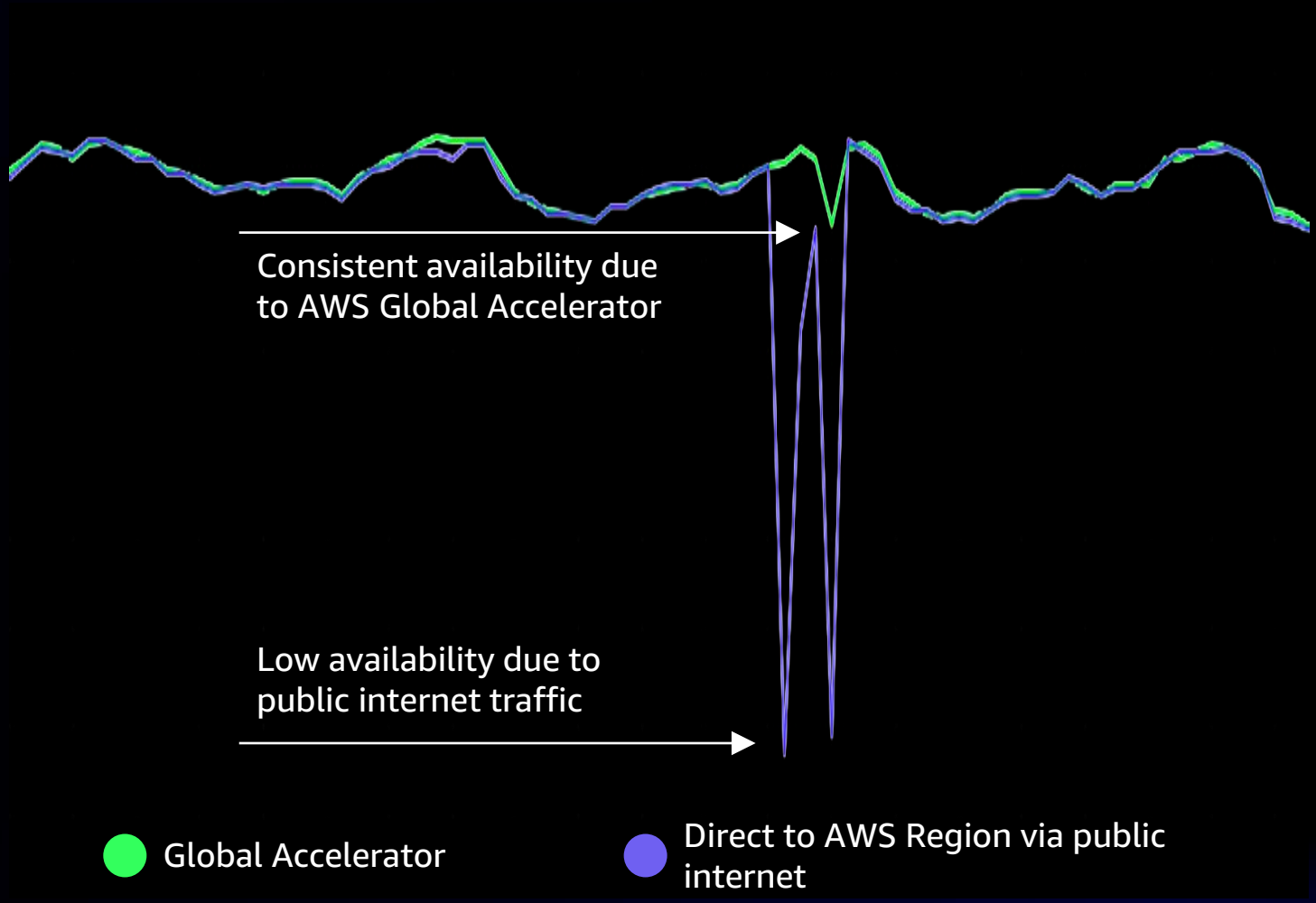
A networking service that improves availability and performance of applications with global reach



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Availability improvements

Availability measured by US clients to N. Virginia Region



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Performance improvement

First byte latency

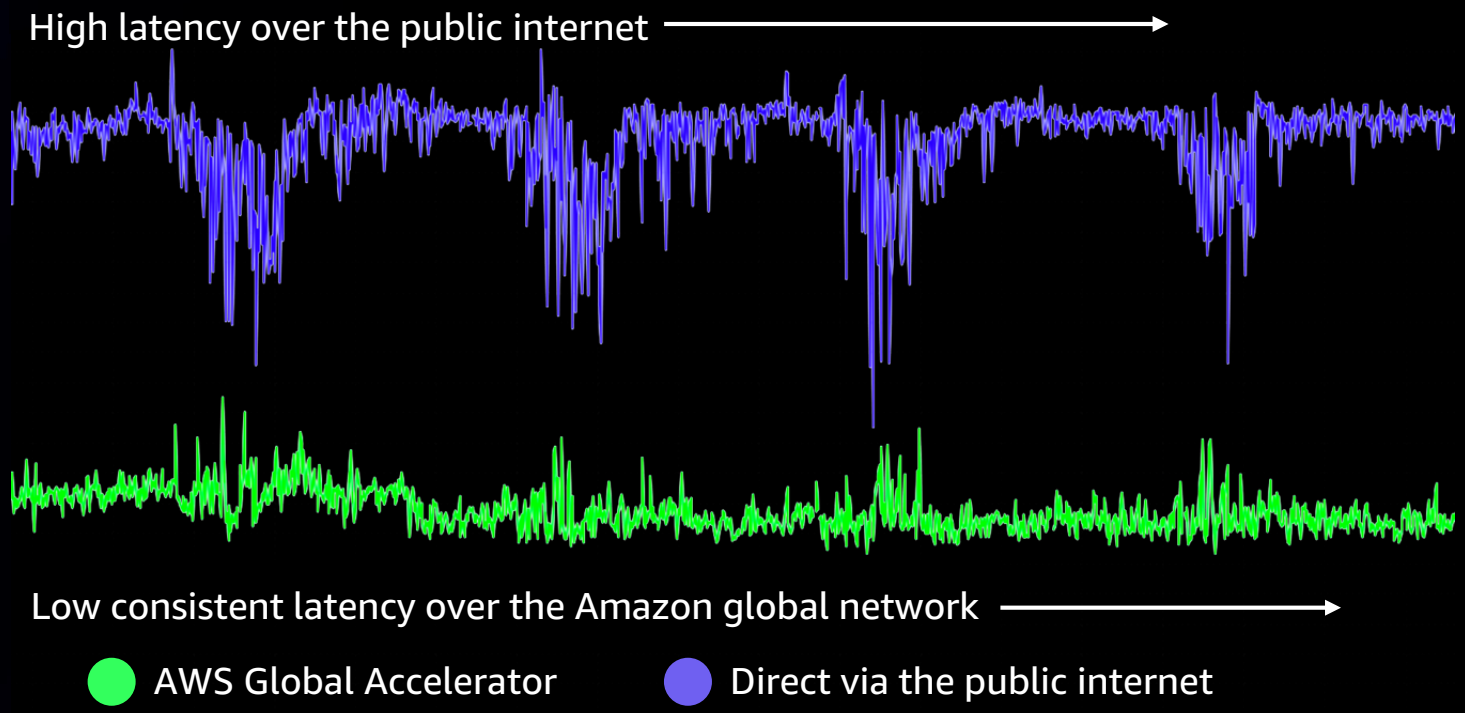
- Up to 49% better than direct *across continents*
- Up to 34% *within a continent*

Throughput

- Up to 60% better than direct *across continents*
- Up to 40% *within a continent*

Jitter

- Up to 58% better than direct *across continents*
- Up to 8% *within a continent*



Third-party real user measurement (P90) from users in Singapore to Ireland Region

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How to measure performance

- **Best solution:**
  - Do your own test from real client traffic with your own QoS system
- **Second best solution:**
  - Use third-party real user measurement (RUM) like Cedixis, Catchpoint
- **Not ideal:**
  - Synthetic testing tools or load generation tools from data centers
- **Don’t do this:**
  - Test from EC2 to EC2, as that already uses the Amazon backbone
- **Resources**
  - https://speedtest.globalaccelerator.aws/#/
  - https://aws.amazon.com/blogs/networking-and-content-delivery/achieve-up-to-60-better-performance-for-internet-traffic-with-aws-global-accelerator/

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Key features



Static IP addresses as fixed entry points to apps in a single AWS Region or in multiple 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 backbone* and is protected from DDoS attacks

* except within the People's Republic of China

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Endpoint selection



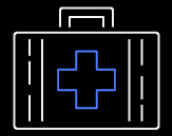
Geo-proximity

Automatically select the closest regional endpoint to client location



Client affinity settings

Continuously select the same endpoint or a given client



Application health

Continuous health checks to endpoints



Customer-configured policies

Customer-defined rules to control traffic to endpoints

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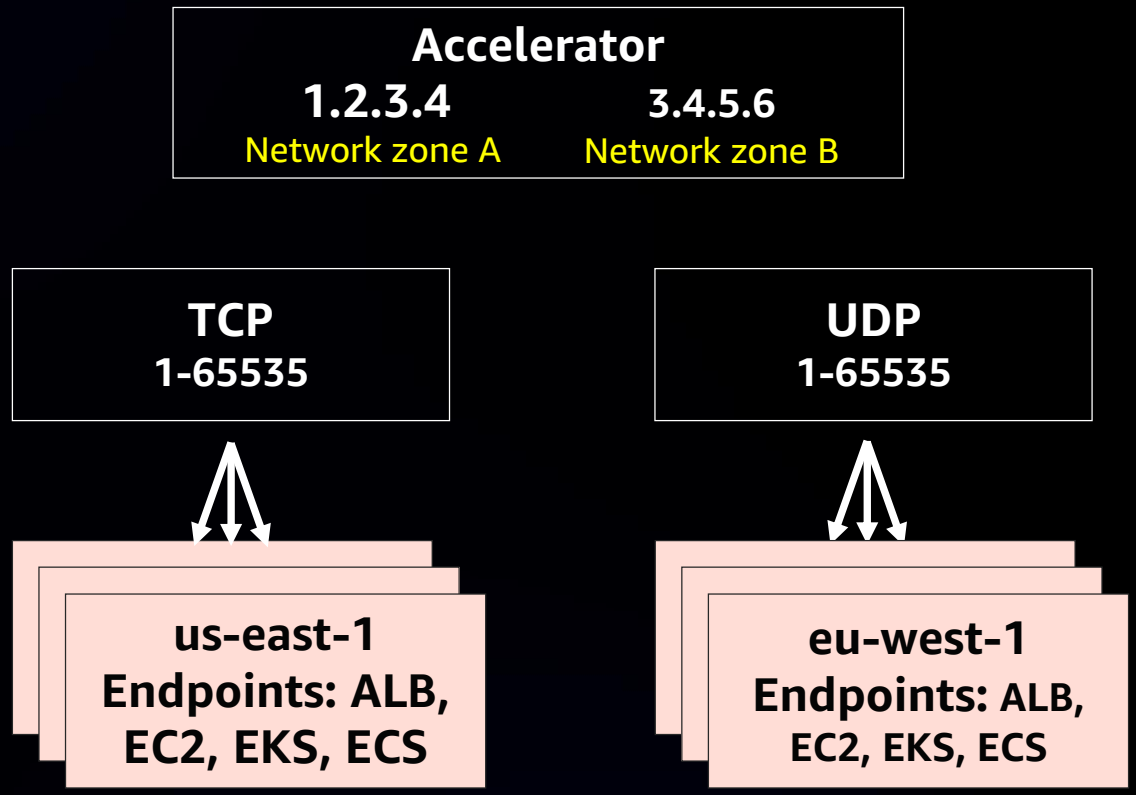
Accelerator configuration

Accelerator IPs

Listeners

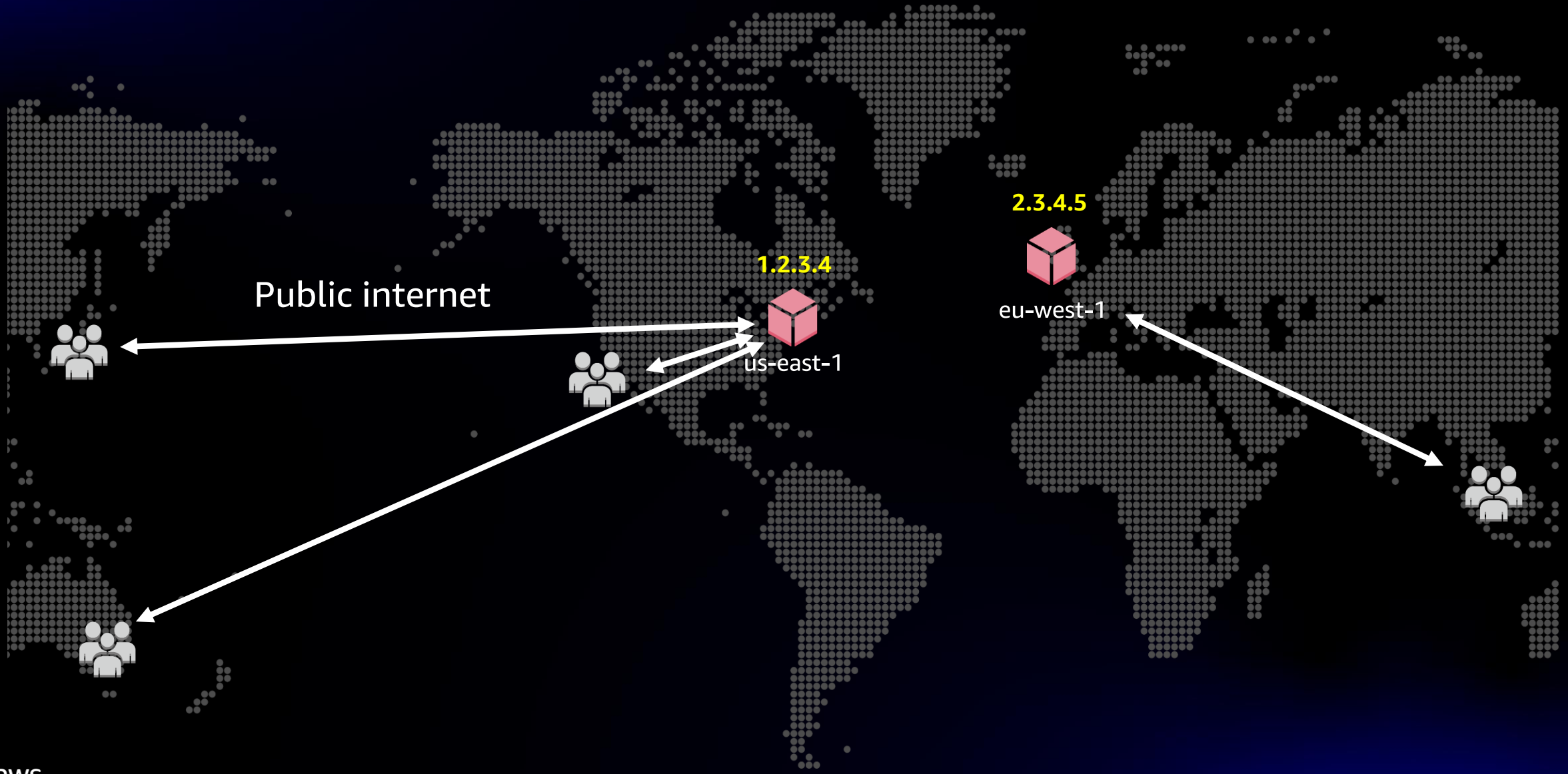
Endpoint groups

Endpoints



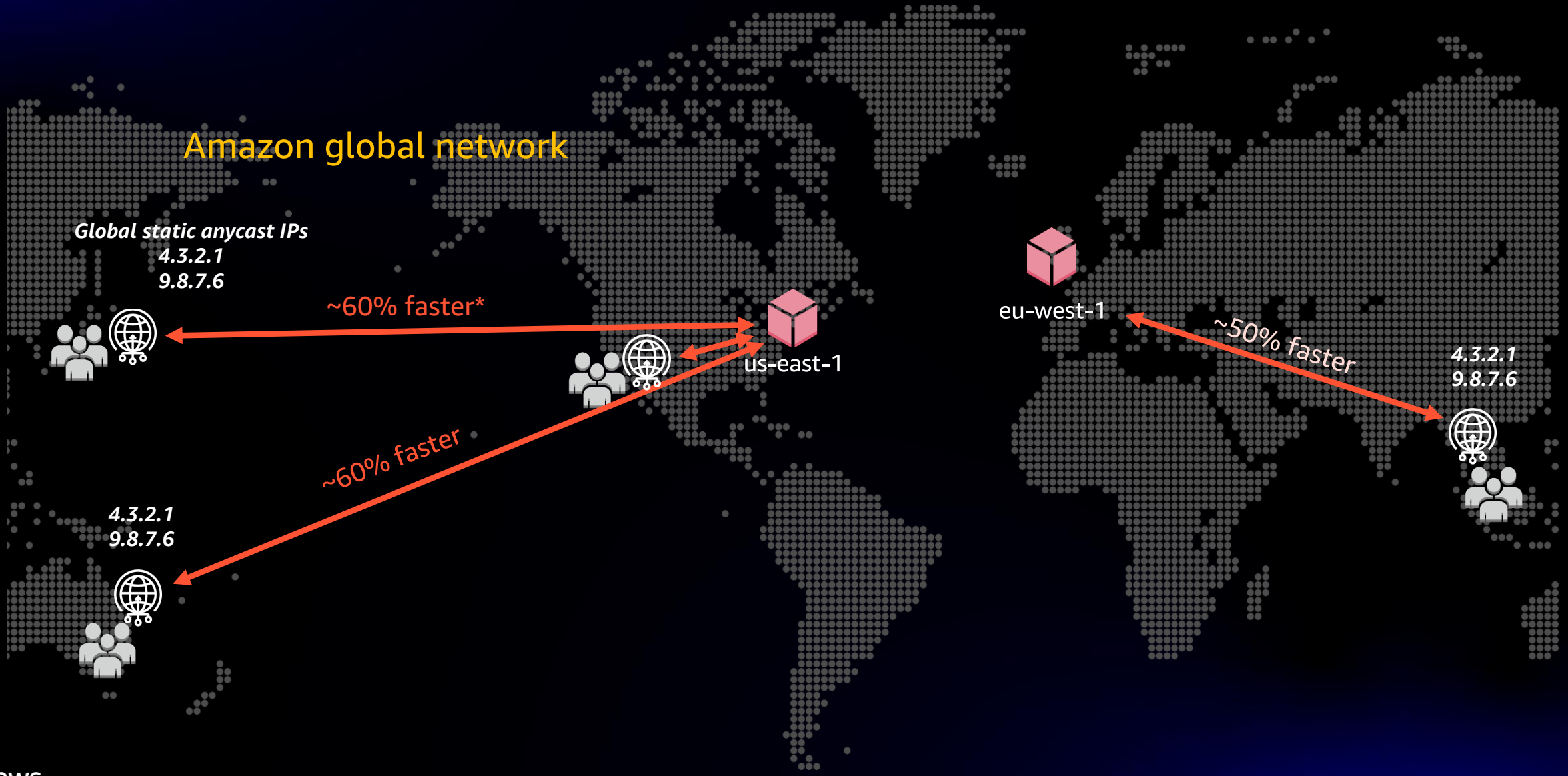
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AWS Global Accelerator – How it works



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AWS Global Accelerator – How it works



*p50 time to download a 100KB object; third-party real-user measurements

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Differences between Amazon Route 53 and AWS Global Accelerator

- Route 53 offers DNS-based geo-routing
  - Cheaper
  - Doesn’t use the backbone; no performance improvement
  - Failover time depends on DNS TTLs set by the customer (5 min? 60 min?)

- Global Accelerator offers global traffic management
  - Price premium
  - Fully uses the backbone, so provides performance improvement
  - Failover time is ~30 seconds and deterministic

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Differences between Amazon CloudFront and AWS Global Accelerator

Key Features	Amazon CloudFront	AWS Global Accelerator
Description	Layer 7 HTTP/S content delivery network	Layer 4 TCP/UDP proxy OR Global traffic manager
Protocol Support	HTTP(S)	Any protocol running over TCP or UDP
Content caching	Yes	No
Routing	DNS-based	Anycast
IP addressing	Dynamic IP addresses, plus soon option to get fixed IP addresses (unicast IPs per PoP)	Two global static IP addresses, with ability to Bring Your Own IP address ranges
Failover	Native origin failover based on HTTP error codes or timeouts, or Route 53 DNS	Built-in origin failover in less than 30 seconds with no dependency on DNS TTLs.
Application hosting	Amazon S3 buckets, HTTP servers (for example, a web server), Amazon MediaStore, or other servers from which CloudFront gets your files	Application Load Balancers, Network Load Balancers, EC2 instances, and Elastic IPs

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When to use AWS Global Accelerator





















Non-HTTP applications

- Gaming (UDP)
- Real-time video (RTP)
- Voice-over IP
- VPN / private connectivity
- DNS hosting (UDP)
- IoT (MQTT)
- File uploads (FTP)
- Push notifications (WebSockets)

HTTP applications

- Blue/green deployment and A+B testing
- Static IPs for IP whitelisting
- Failover resilience for multi-Region applications

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Standard versus custom routing accelerator

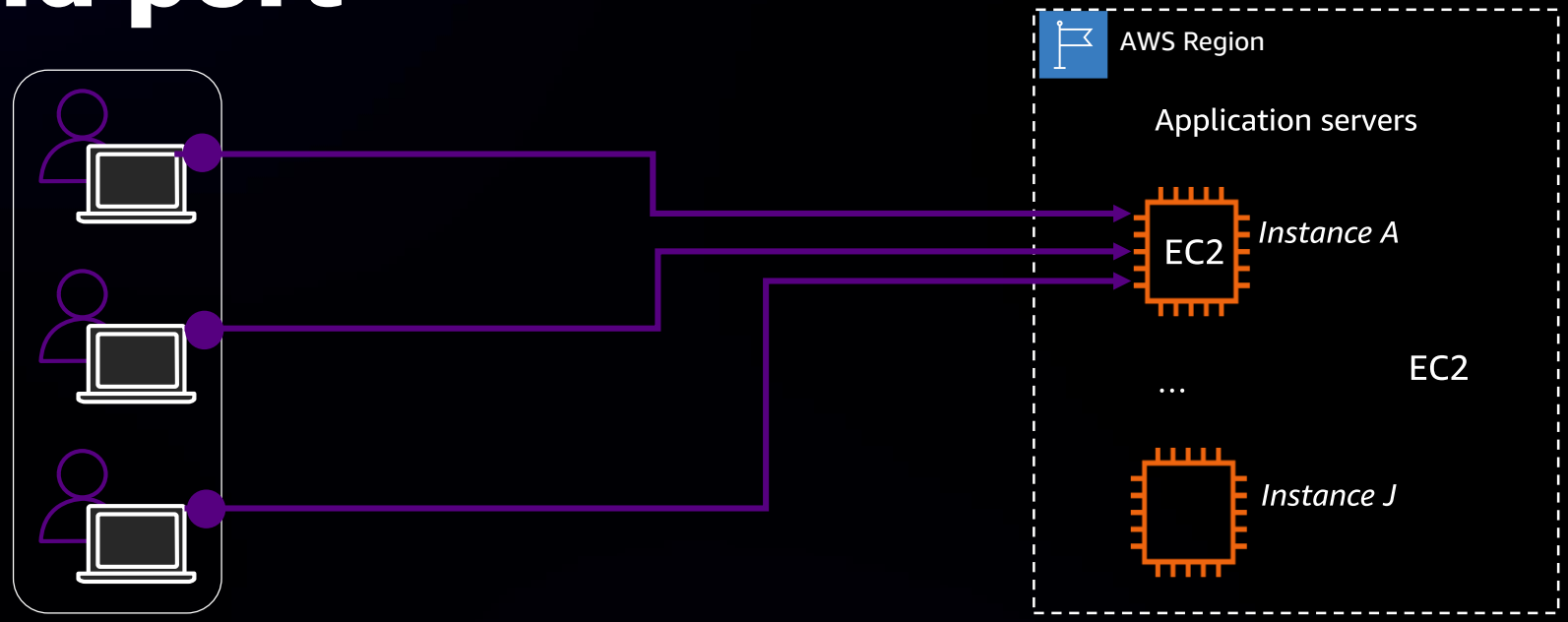
Key features	Standard accelerator	Custom accelerator
Routing	Automatically picks the closest healthy endpoint. Uses traffic dials, endpoint weights, and client affinity to manage traffic.	IP address and port of the destination EC2 instance the user traffic should be routed to
Endpoints	Application Load Balancers (ALBs), Network Load Balancers (NLBs), EC2 instances, and Elastic IPs (EIPs)	VPC subnets (traffic is routed only to EC2 instances in the subnets)
Protocol selection	TCP OR UDP at Listener level	TCP AND/OR UDP at Endpoint group level

Launch blog post: https://aws.amazon.com/blogs/networking-and-content-delivery/introducing-aws-global-accelerator-custom-routing-accelerators/

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Custom routing – Route users to the same EC2 instance and port

Your application logic matches multiple users based on various factors



Match multiple players to the same destination based on factors such as player level, geography, and skill

Multi-player gaming

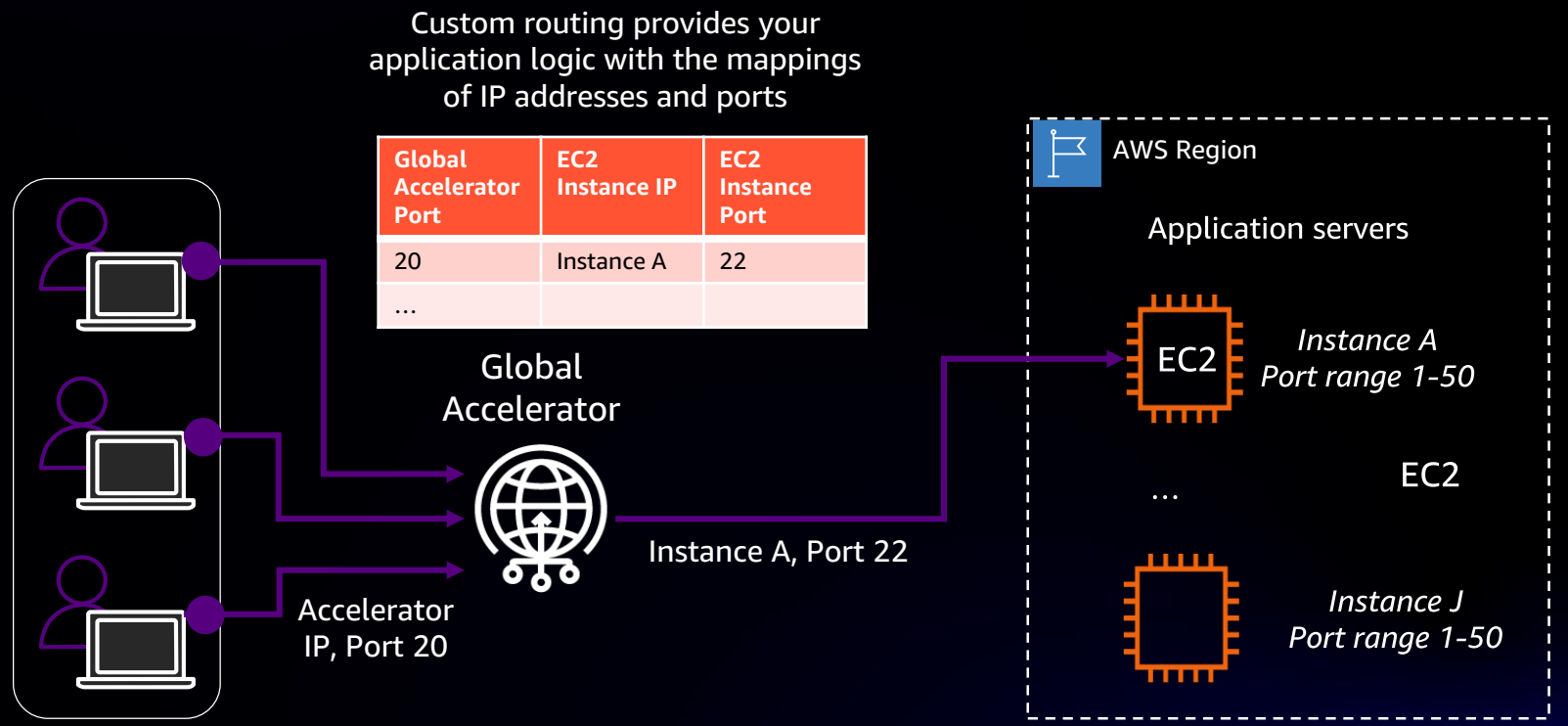


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Custom routing – Route users to the same EC2 instance and port

Improve the network performance of your applications using AWS Global Accelerator, while allowing you to deterministically route multiple users to a specific destination EC2 IP and port

Your application logic matches multiple users based on various factors

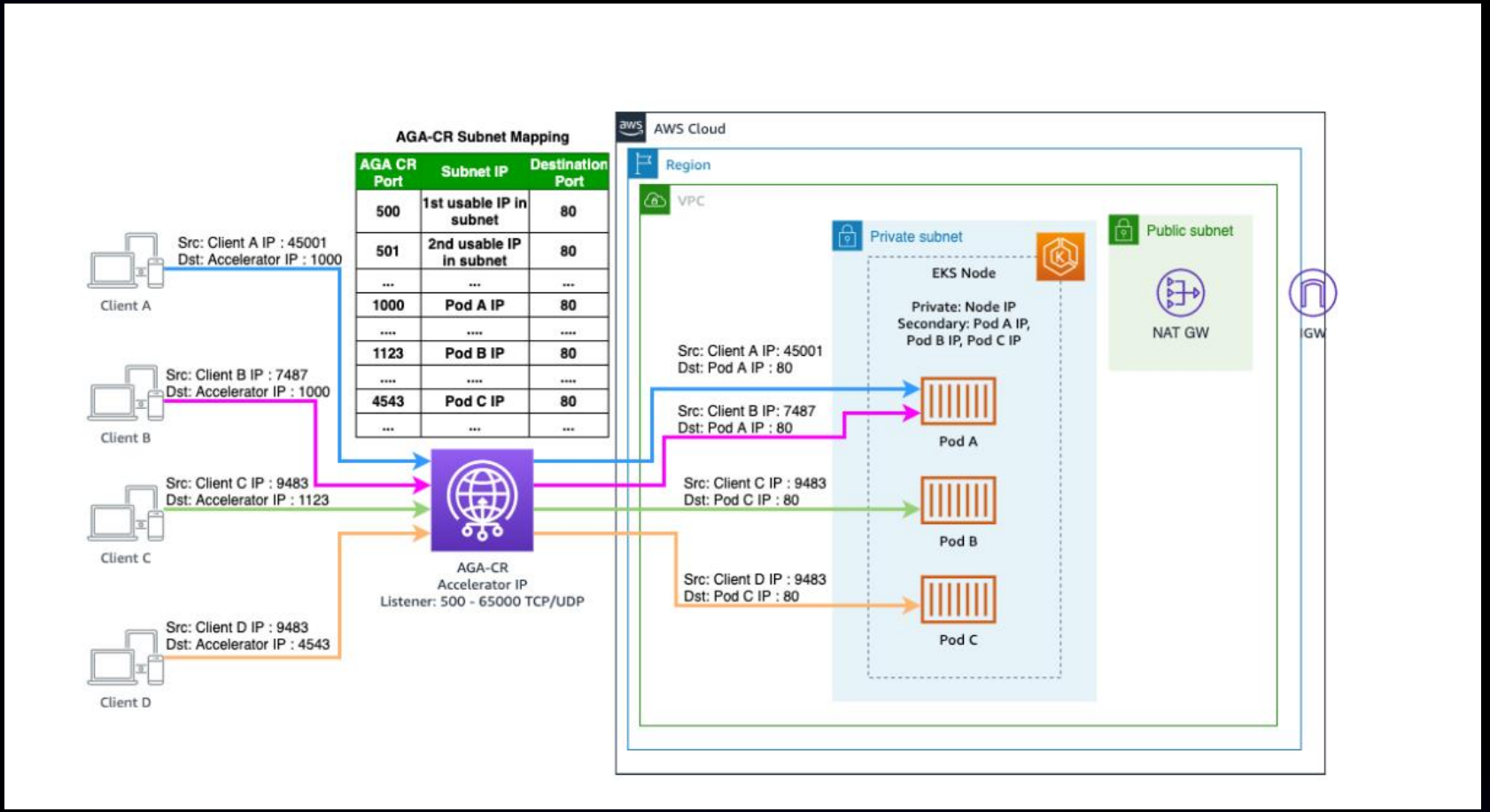


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Amazon ECS/EKS + AWS Global Accelerator

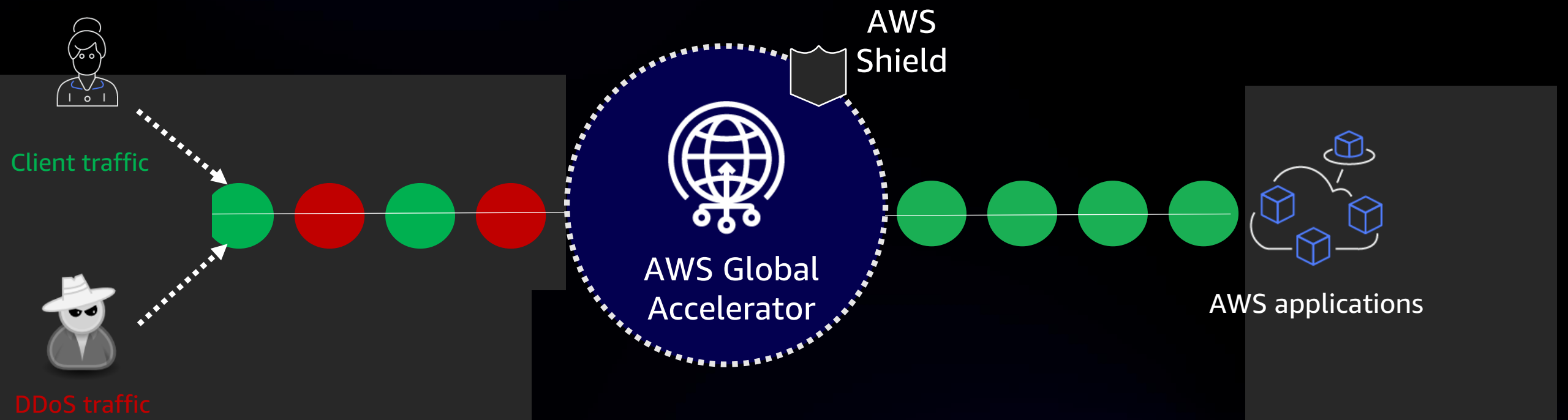
1. Scalable – Container images make it easy for customers to deploy

2. ECS/EKS – Blog coming soon



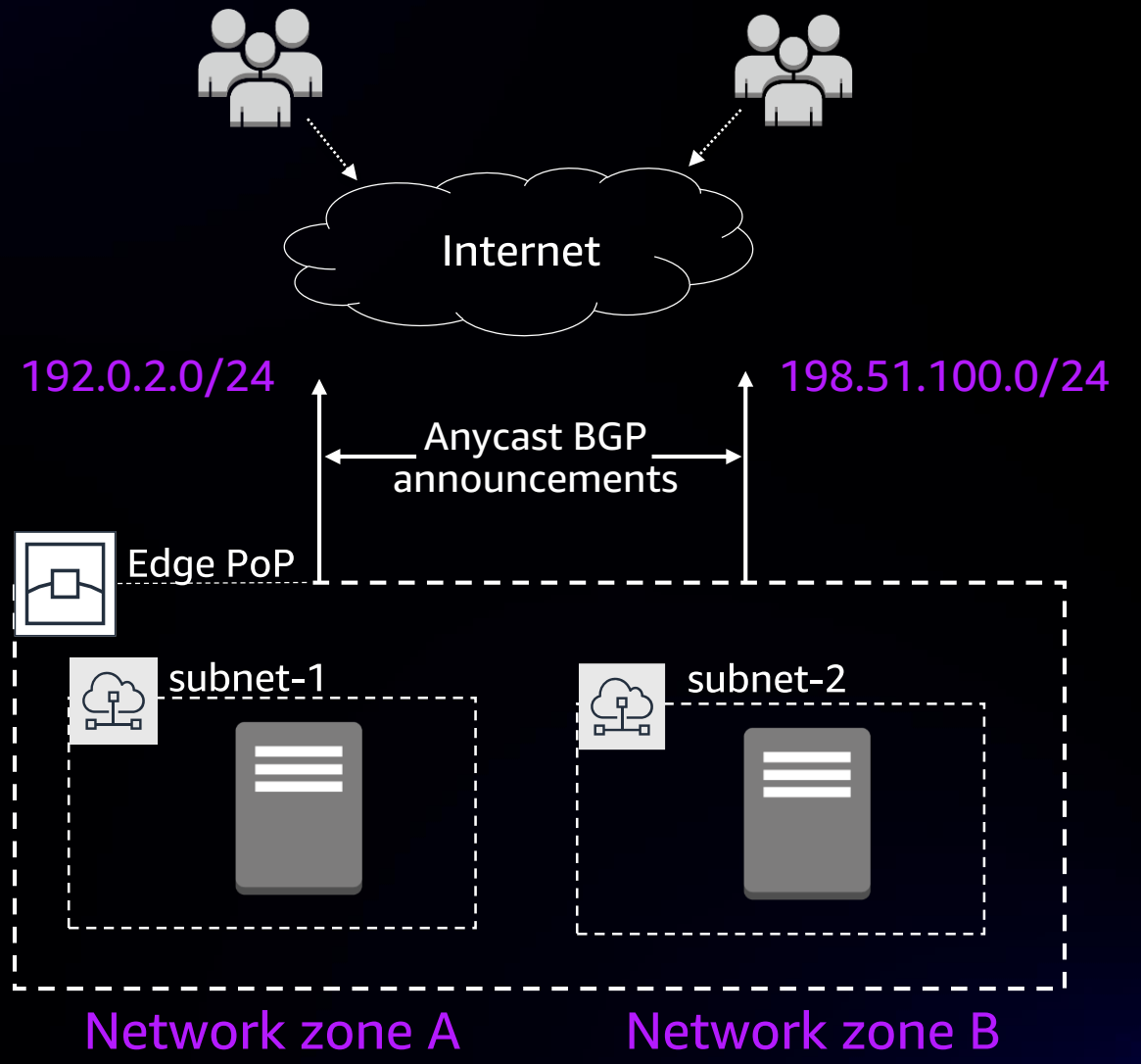
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DDoS protection at edge



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Fault isolating design – Network zones



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AWS Global Accelerator – Pricing

Hourly fee

~$18/month per accelerator

+

Data transfer – Premium

Fee per GB of data transferred in the dominant direction per source-destination pair

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AWS Global Accelerator – Pricing

Fixed Fee

$0.025 for every hour or partial hour that your acceleration runs

+

Data transfer – Premium

Fixed fee per GB of data transferred in the dominant direction per source-destination pair

		Destination (AWS edge locations)					
		US & Canada	**Europe**	**Asia Pacific**	**South Korea**	**India**	**Australia**
Source (AWS Regions)	**US & Canada**	$0.015	$0.015	$0.035	$0.035	$0.035	$0.105
	Europe	$0.015	$0.015	$0.043	$0.035	$0.033	$0.105
	Asia Pacific	$0.012	$0.043	$0.010	$0.058	$0.032	$0.080
	South Korea	$0.017	$0.020	$0.043	$0.043	$0.067	$0.080
	India	$0.025	$0.023	$0.023	$0.072	$0.023	$0.094
	Australia	$0.070	$0.070	$0.074	$0.091	$0.101	$0.007

The DT-Premium fee is in addition to the standard EC2 Data Transfer Out fees

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Thank you!

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