

The background features a dark navy blue field with abstract, overlapping shapes in vibrant magenta and deep purple. Two thin, light blue lines intersect diagonally across the upper right portion of the image. The overall aesthetic is modern and tech-oriented.

# AWS re:Invent

DECEMBER 2 – 6, 2024 | LAS VEGAS, NV

# How Star Wars: Hunters got to the next level with Amazon GameLift

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# Game dev: Launch day



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# Agenda

- 1 Multiplayer game requirements
- 2 Amazon GameLift resources
- 3 Implementation journey
- 4 Launch successes
- 5 Recommendations for game studios



# NaturalMotion

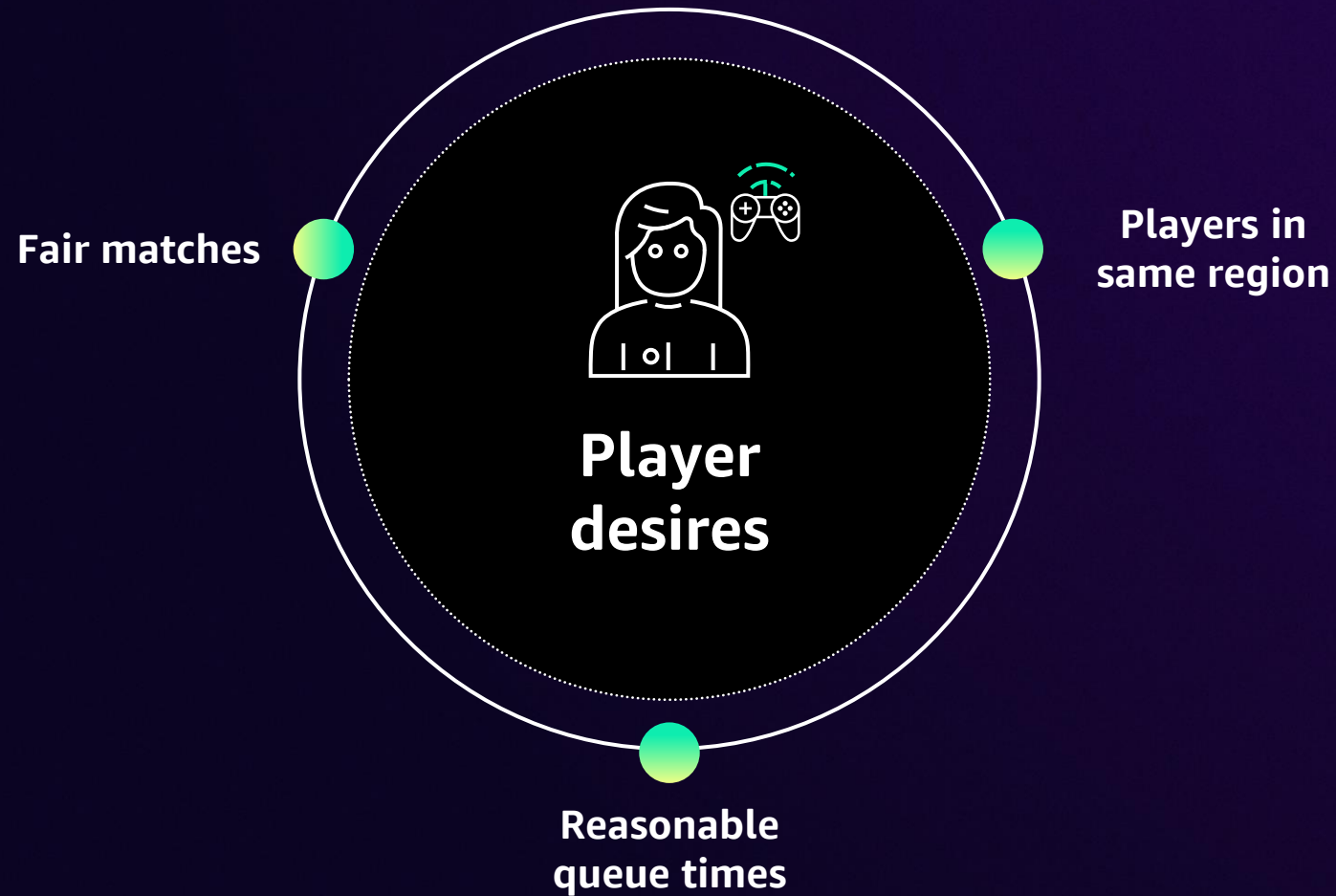




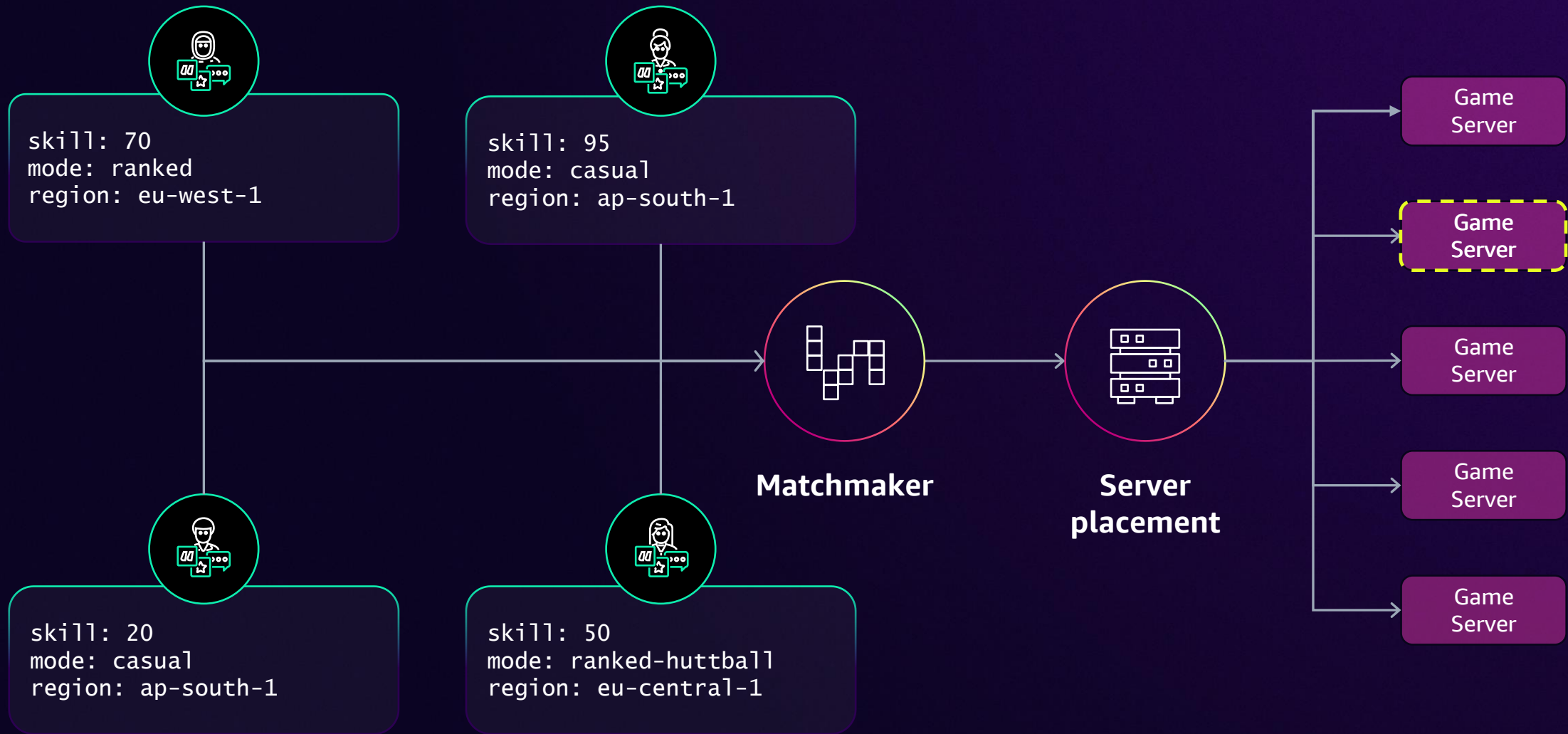
# Multiplayer server requirements



# Matchmaking

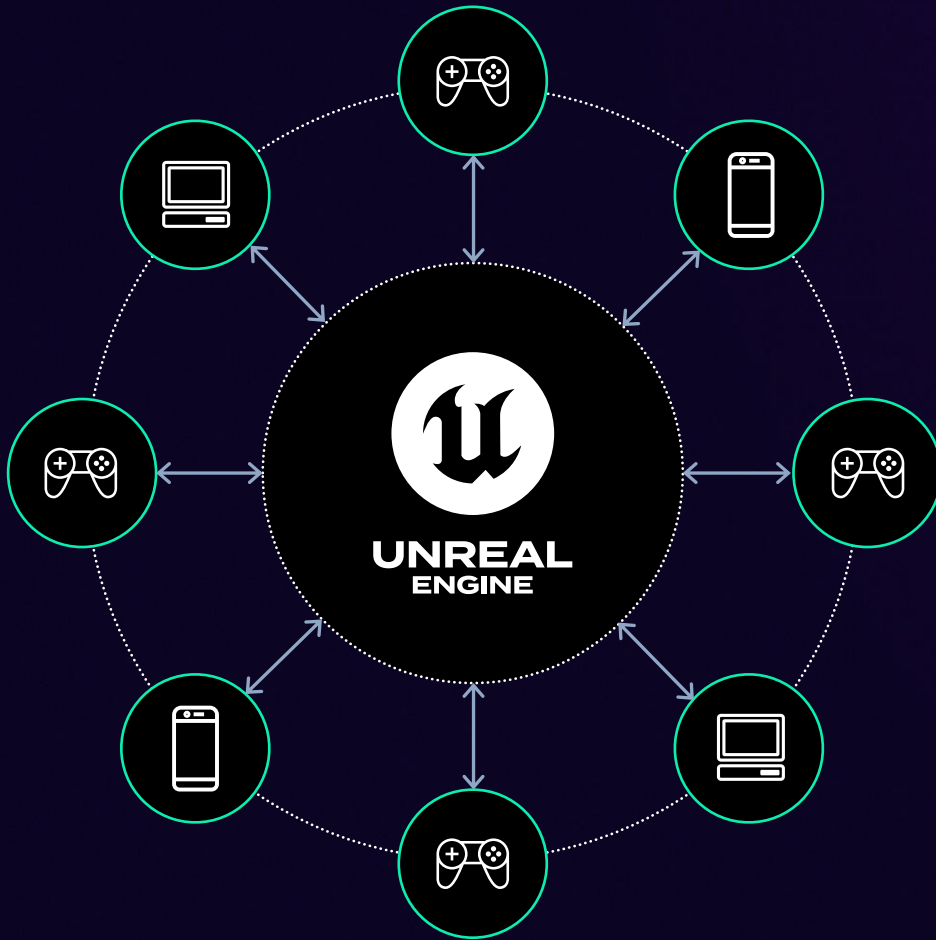


# Matchmaking





# Game server



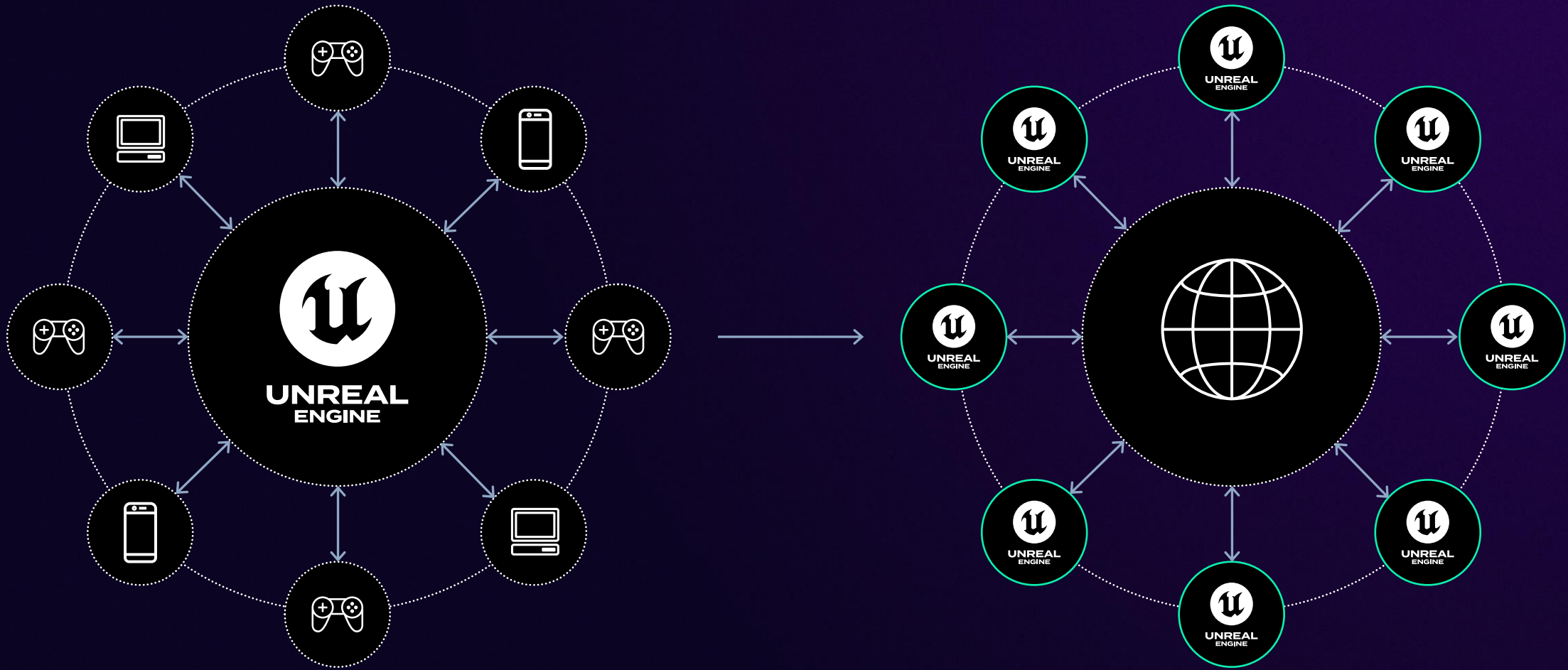
## Authoritative Server

- Simulates player actions
- Ensures game state consistency

## On Hunters:

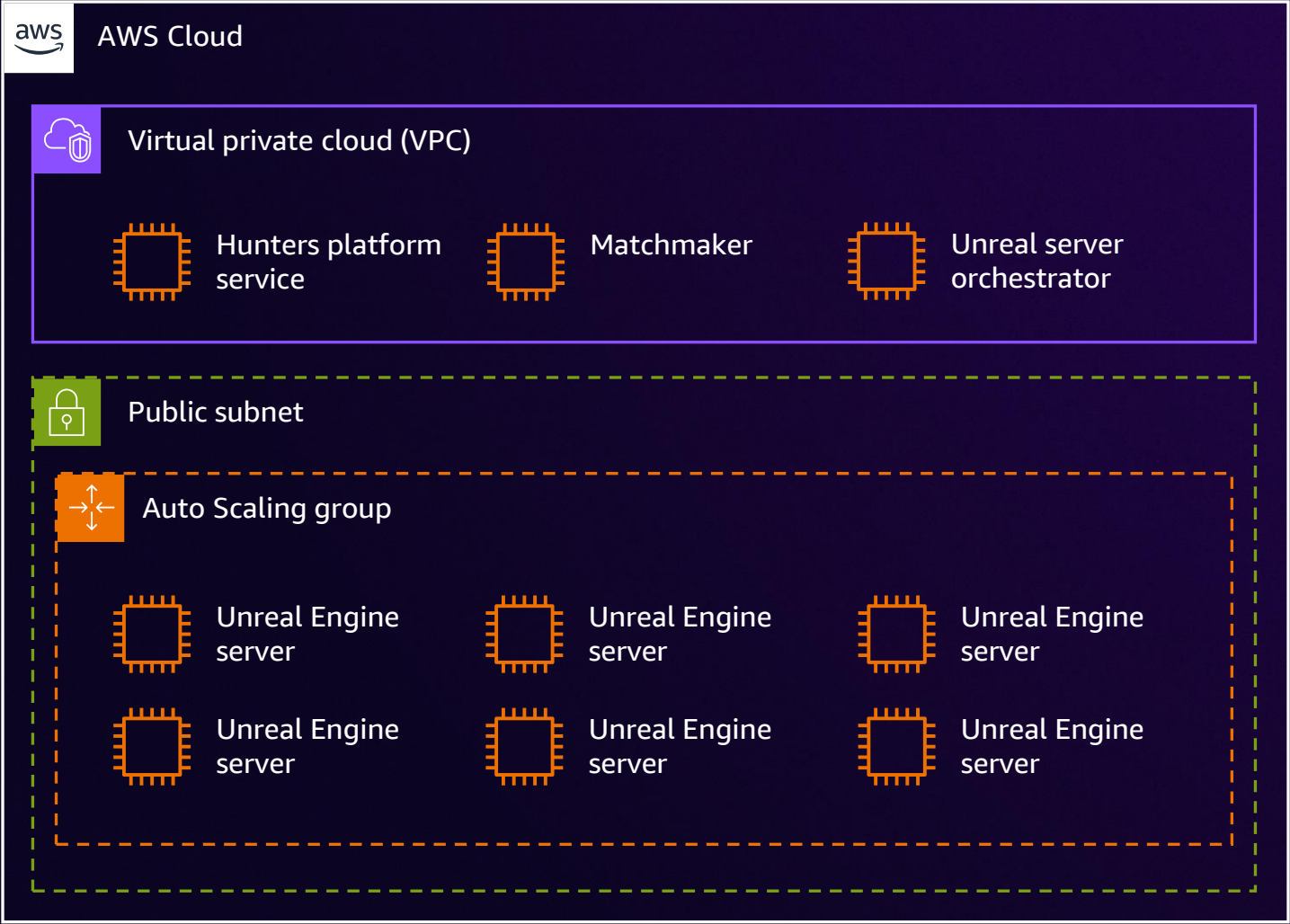
- Game clients: iOS, Android, Nintendo Switch
- Linux based Unreal Engine server
- Low player-to-server ratio

# Game server(s) globally distributed





# In-house prototype



# Why we chose Amazon GameLift



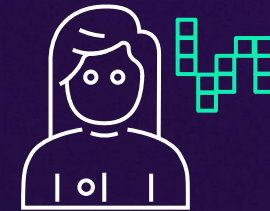
## Global presence

Fully managed game servers hosted across AWS Regions on multiple Availability Zones providing availability and scalability



## Cost optimized

Scale game servers automatically based on player demand and leverage low-cost Spot Instances for global game sessions



## Matchmaking

FlexMatch with match-based rules designed to support game play



# Adopting Amazon GameLift



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# Amazon GameLift resources



Amazon Flexmatch  
Ruleset



Amazon Flexmatch  
Config



Amazon Game  
Session Queue



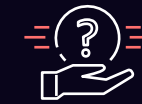
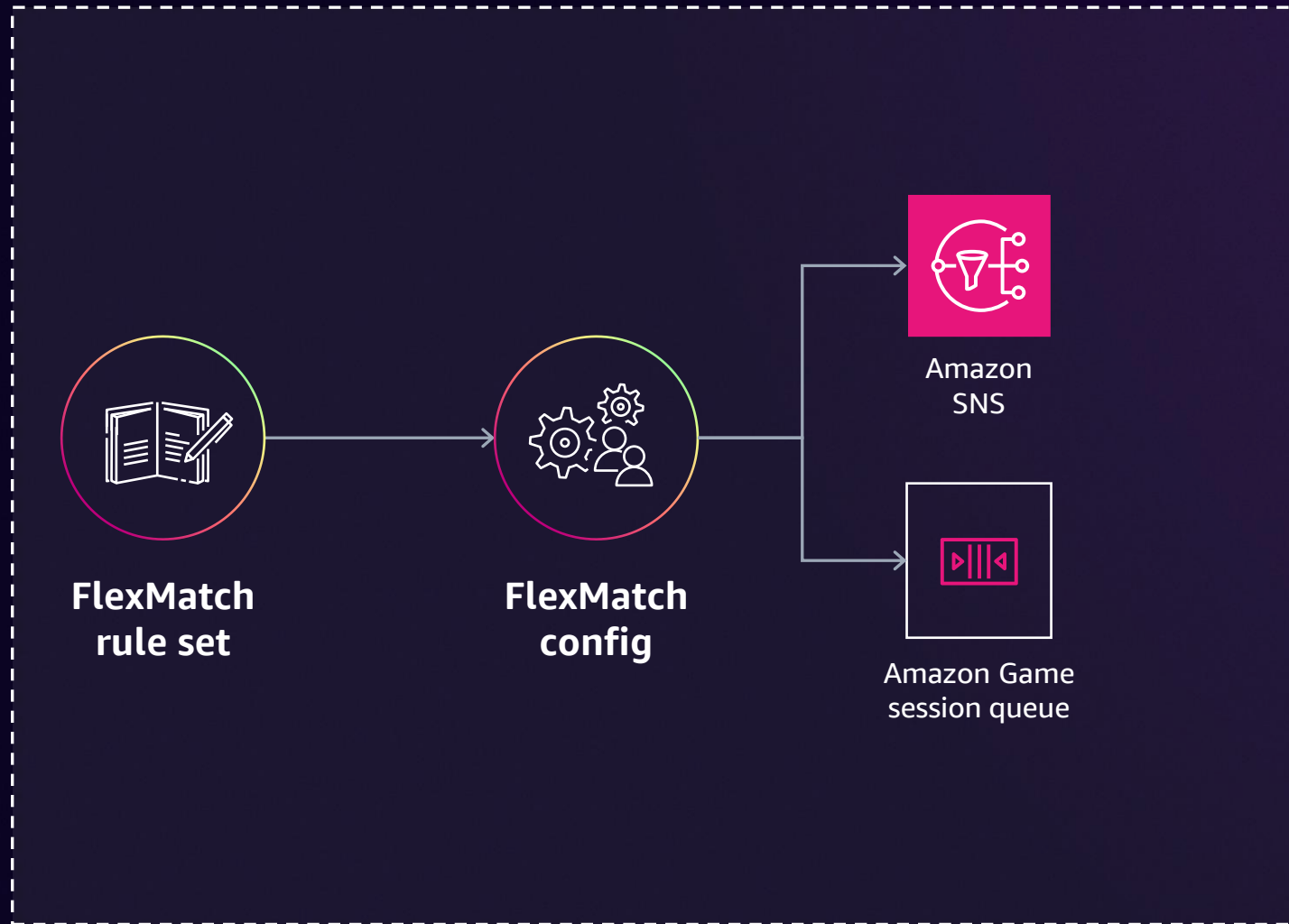
Amazon GameLift  
Fleet



Amazon GameLift  
Build



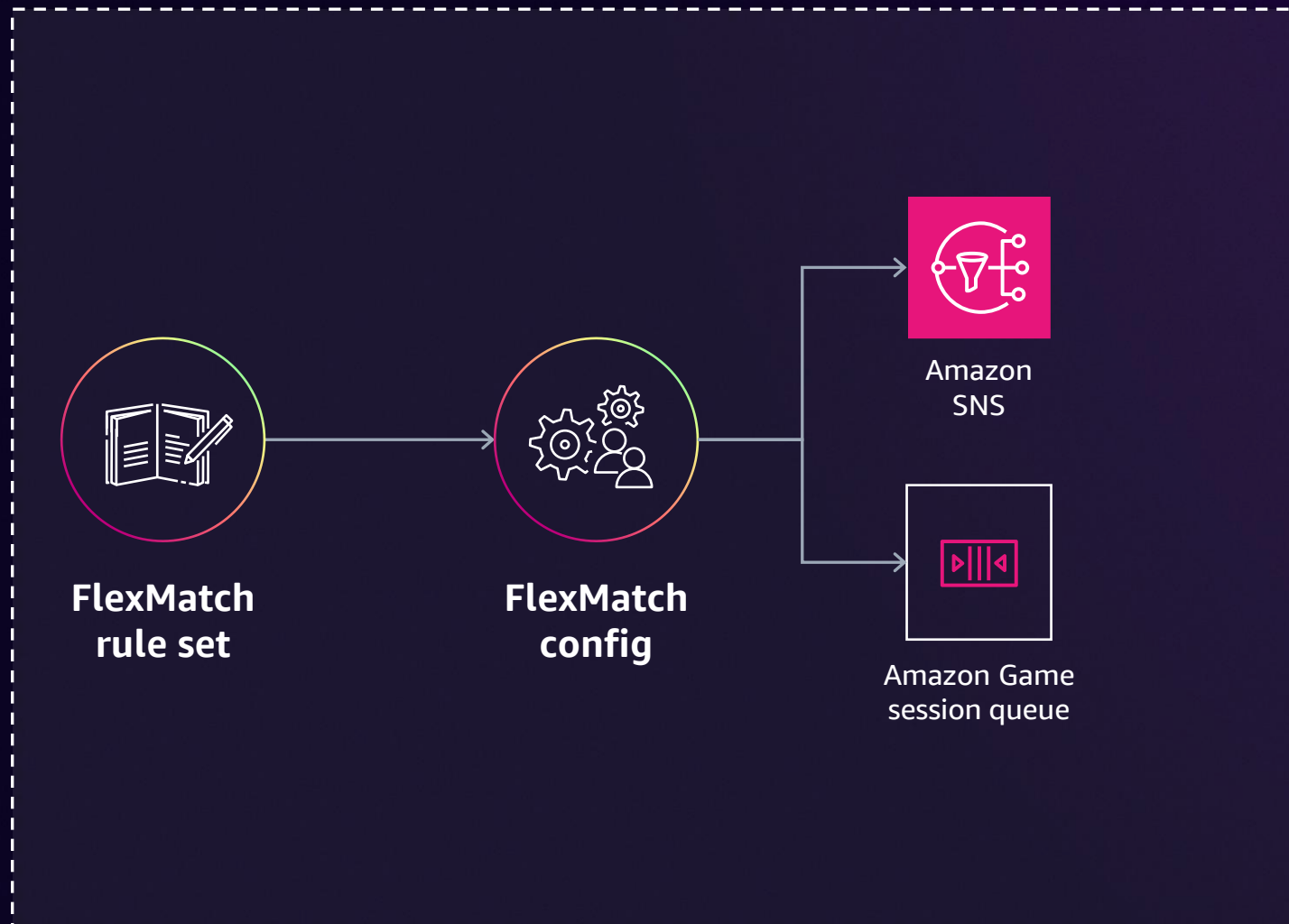
# FlexMatch rule set and config



## What is it?

- Rule set defines match queue parameters
- Config aligns rulesets with downstream resources

# FlexMatch rule set and config

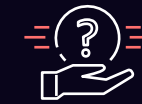
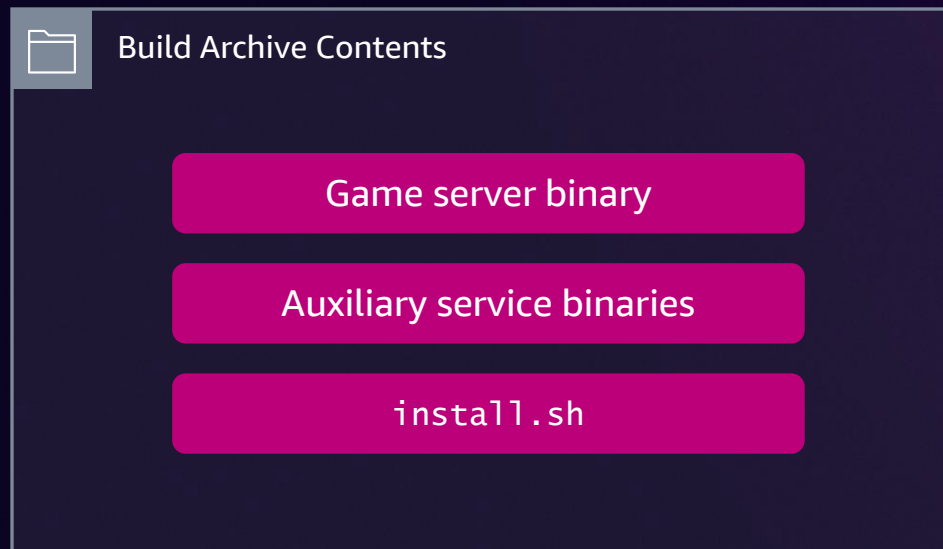


## For Hunters

- Fast rule replacement
- Post-submit rule validation checks



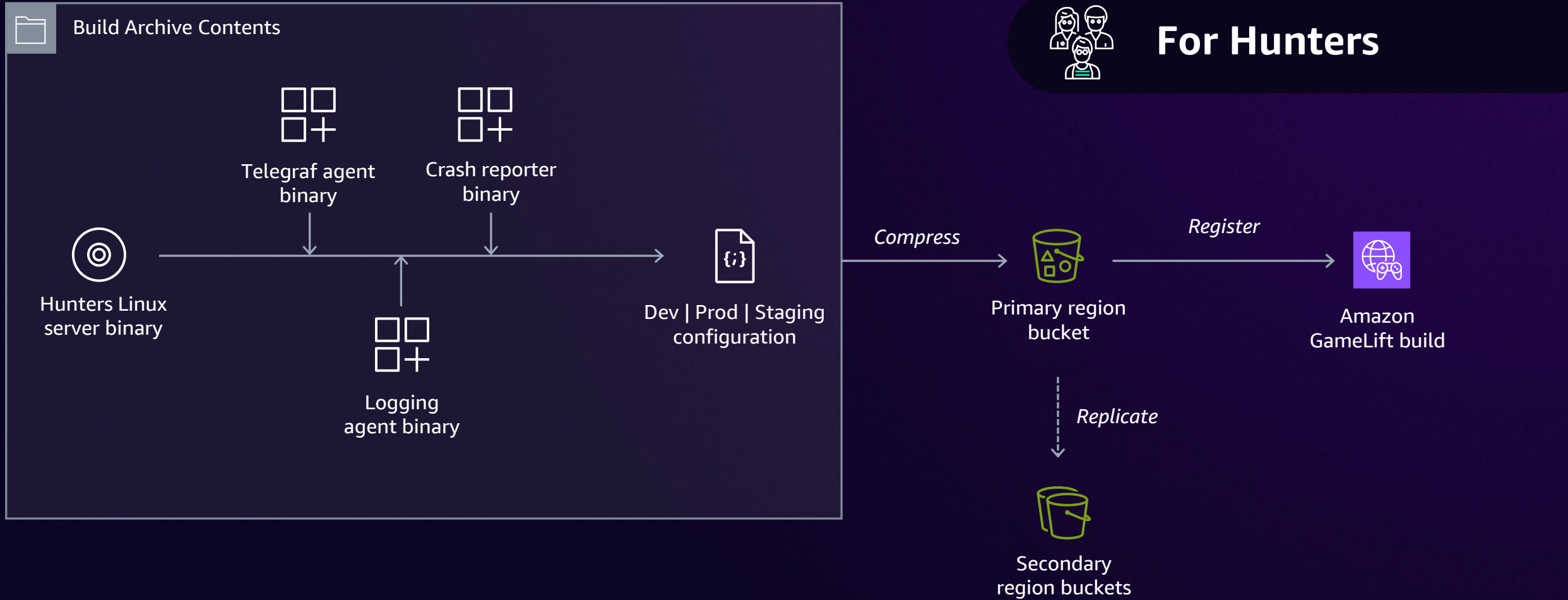
# Amazon GameLift build



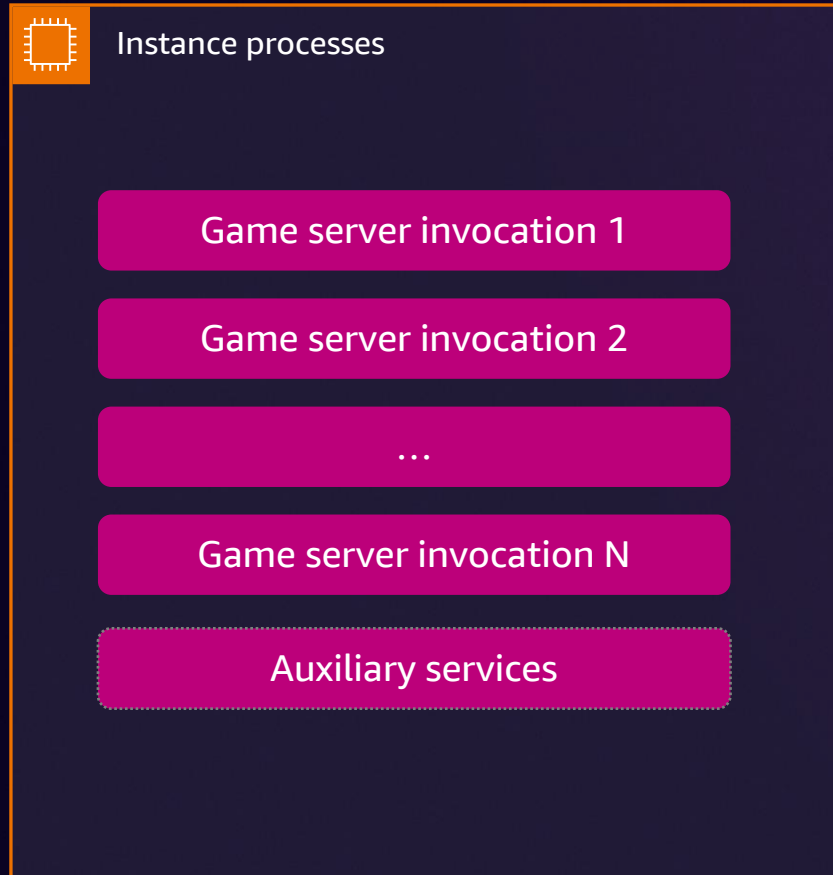
## What is it?

- File archive
- Loaded onto instance for snap-shotting

# Amazon GameLift build



# Amazon GameLift instance



## What is it?

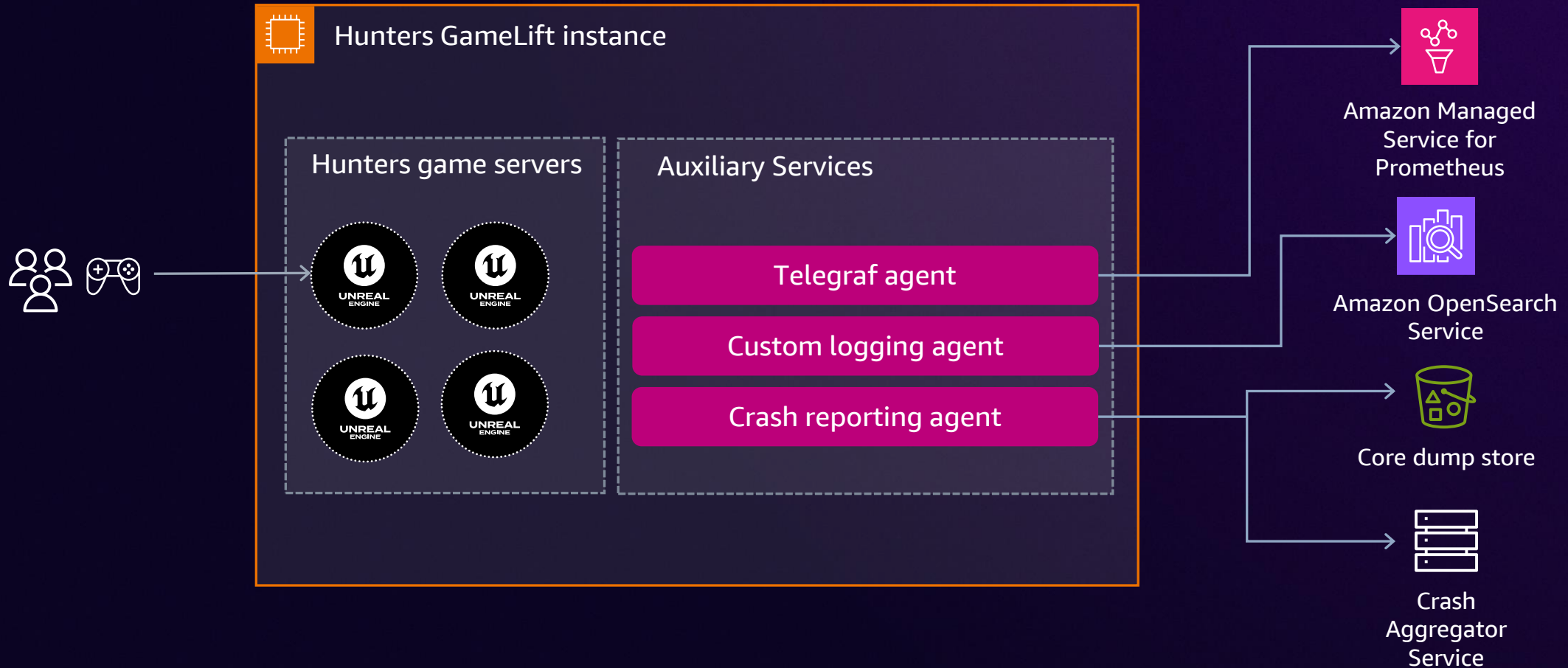
- Game build on an instance
- 1-50 server instances
- Auxiliary services



# Amazon GameLift instance



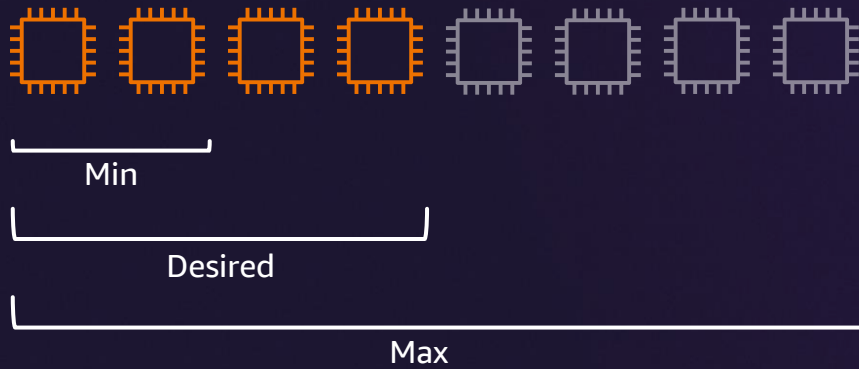
For Hunters



# Amazon GameLift fleet



## Fleet



us-east-1



eu-west-1



us-west-1



ca-central-1



ap-south-2

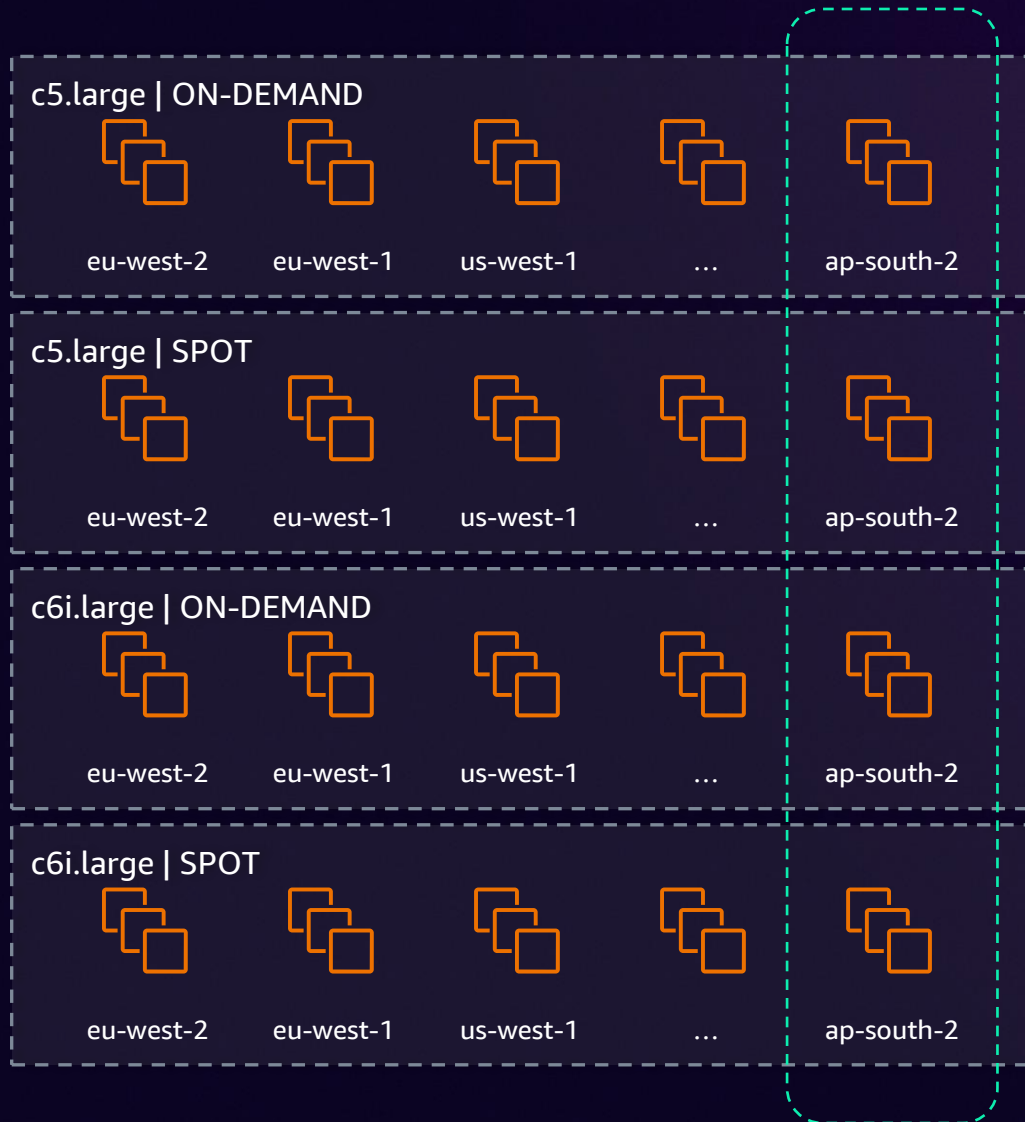
Home Region



## What is it?

- Scalable set of instances
- Parameters:
  - Instance count
  - Scaling rules
  - Instance pricing (On-Demand, Spot)
  - Instance size (c5.\*, c6i.\* etc.)
  - Region(s)

# Amazon GameLift fleet



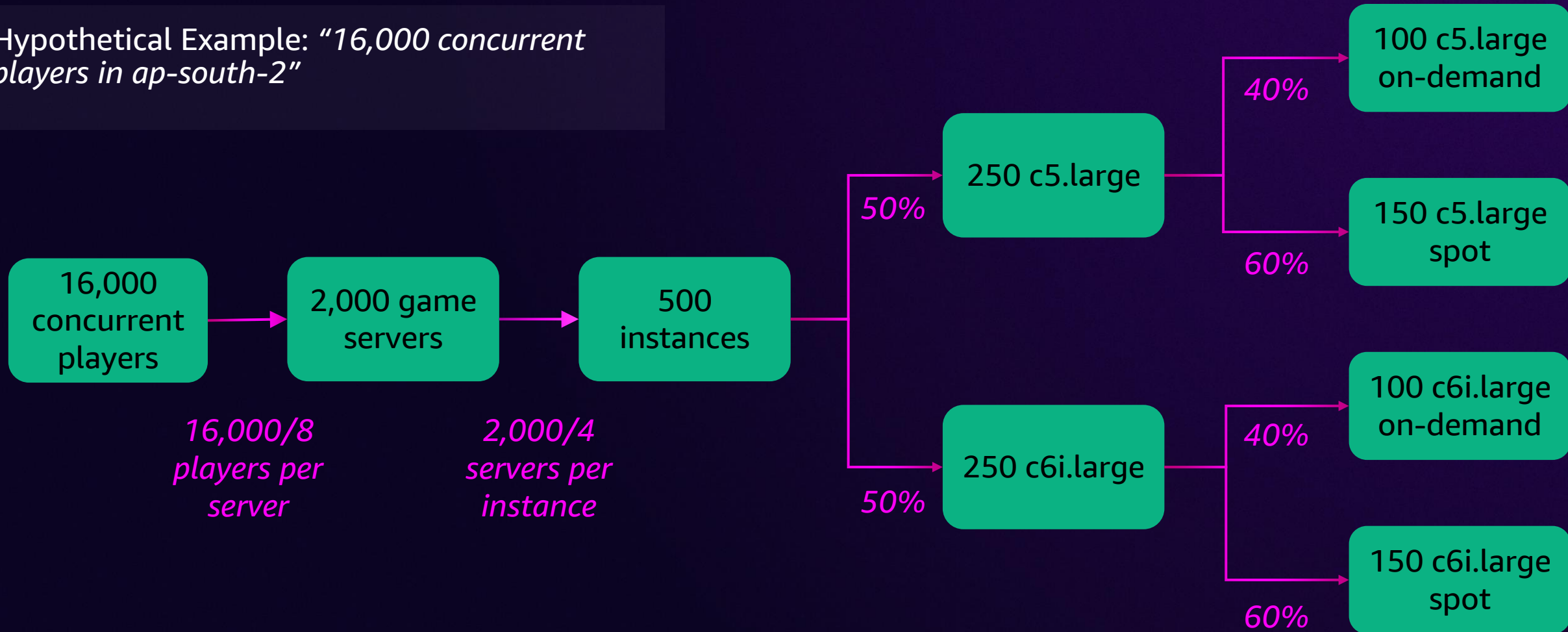
## For Hunters

- Spot savings
- Instance diversity

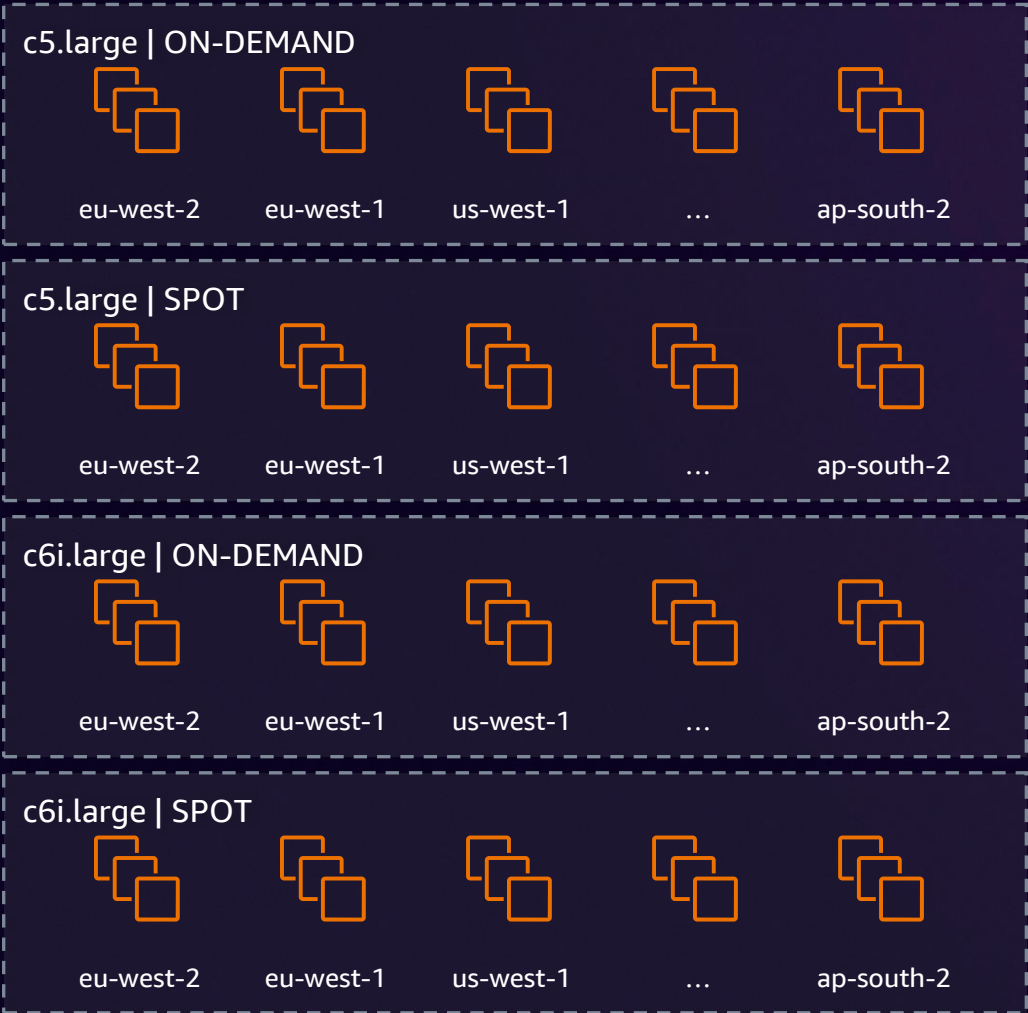


# Fleet calculation

Hypothetical Example: "16,000 concurrent players in ap-south-2"



# Amazon GameLift fleet



For Hunters

# Amazon GameLift fleet



For Hunters



# Amazon GameLift fleet

c5.large | ON-DEMAND

30

eu-west-2

50

eu-west-1

500

us-west-1

...

...

100

ap-south-2

c5.large | SPOT

45

eu-west-2

75

eu-west-1

750

us-west-1

...

...

150

ap-south-2

c6i.large | ON-DEMAND

30

eu-west-2

50

eu-west-1

500

us-west-1

...

...

100

ap-south-2

c6i.large | SPOT

45

eu-west-2

75

eu-west-1

750

us-west-1

...

...

150

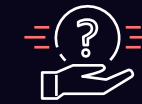
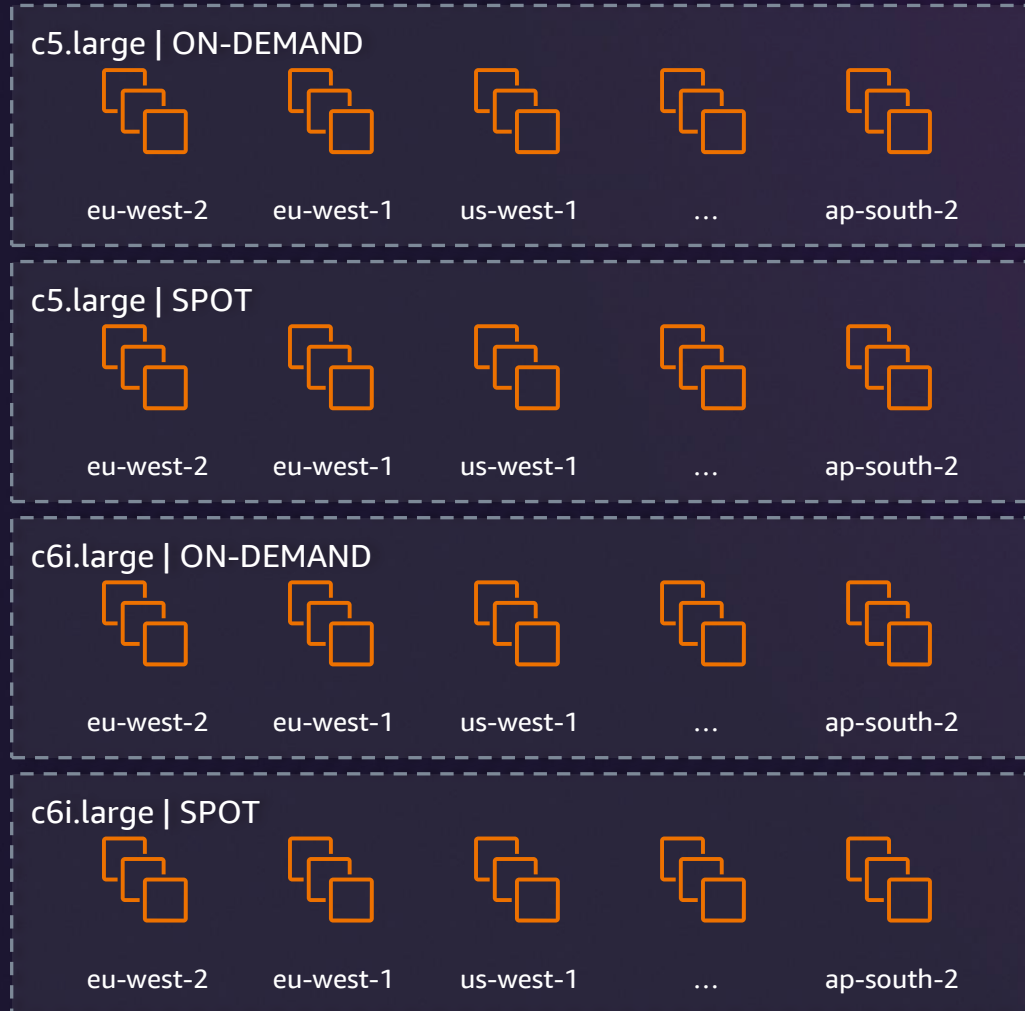
ap-south-2



## For Hunters

- Tooling:
  - Fleet sizing calculators
  - Cost estimators
  - Historical usage analysis

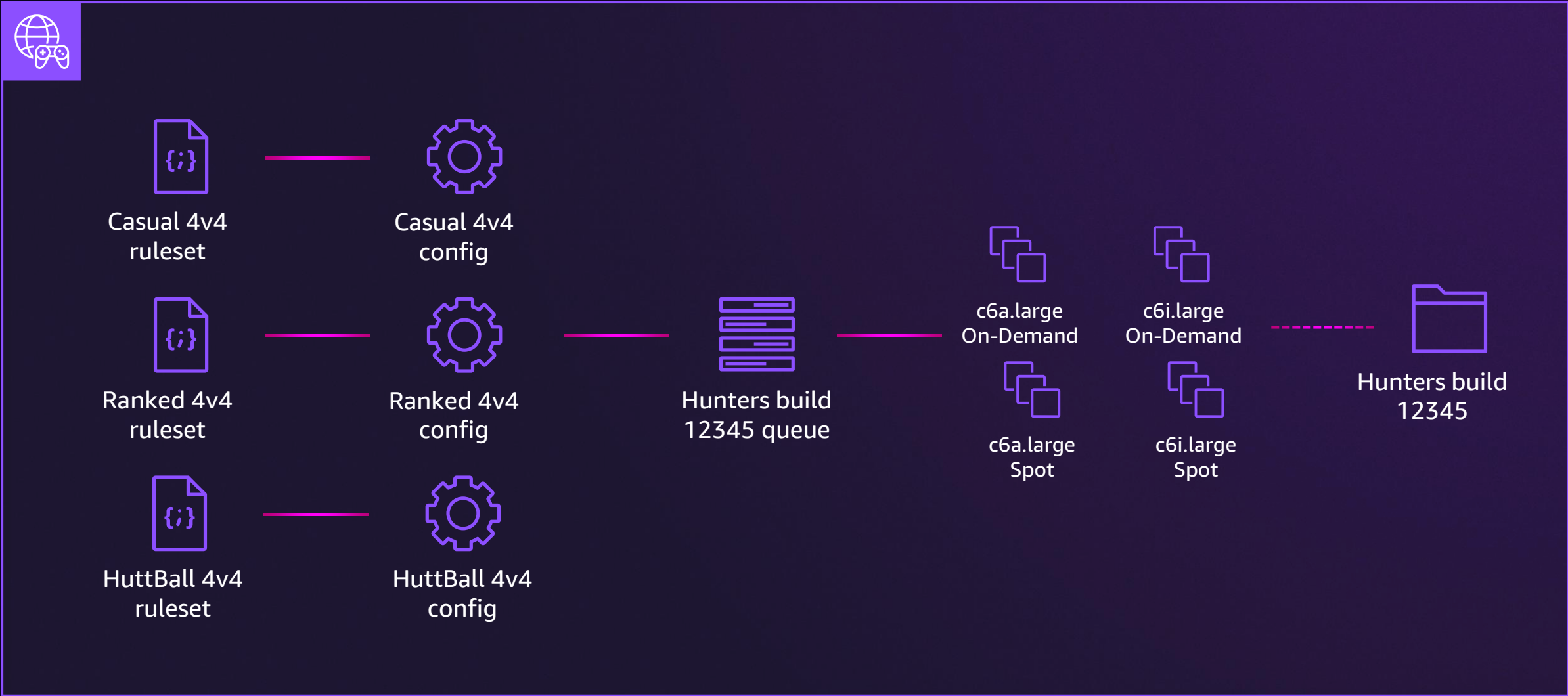
# Amazon GameLift game session queue



## What is it?

- An Amazon GameLift game session queue references all fleets
- Queues are where matchmade groups of players land
- Queues have placement policies:
  - Latency
  - Cost

# Amazon GameLift resources

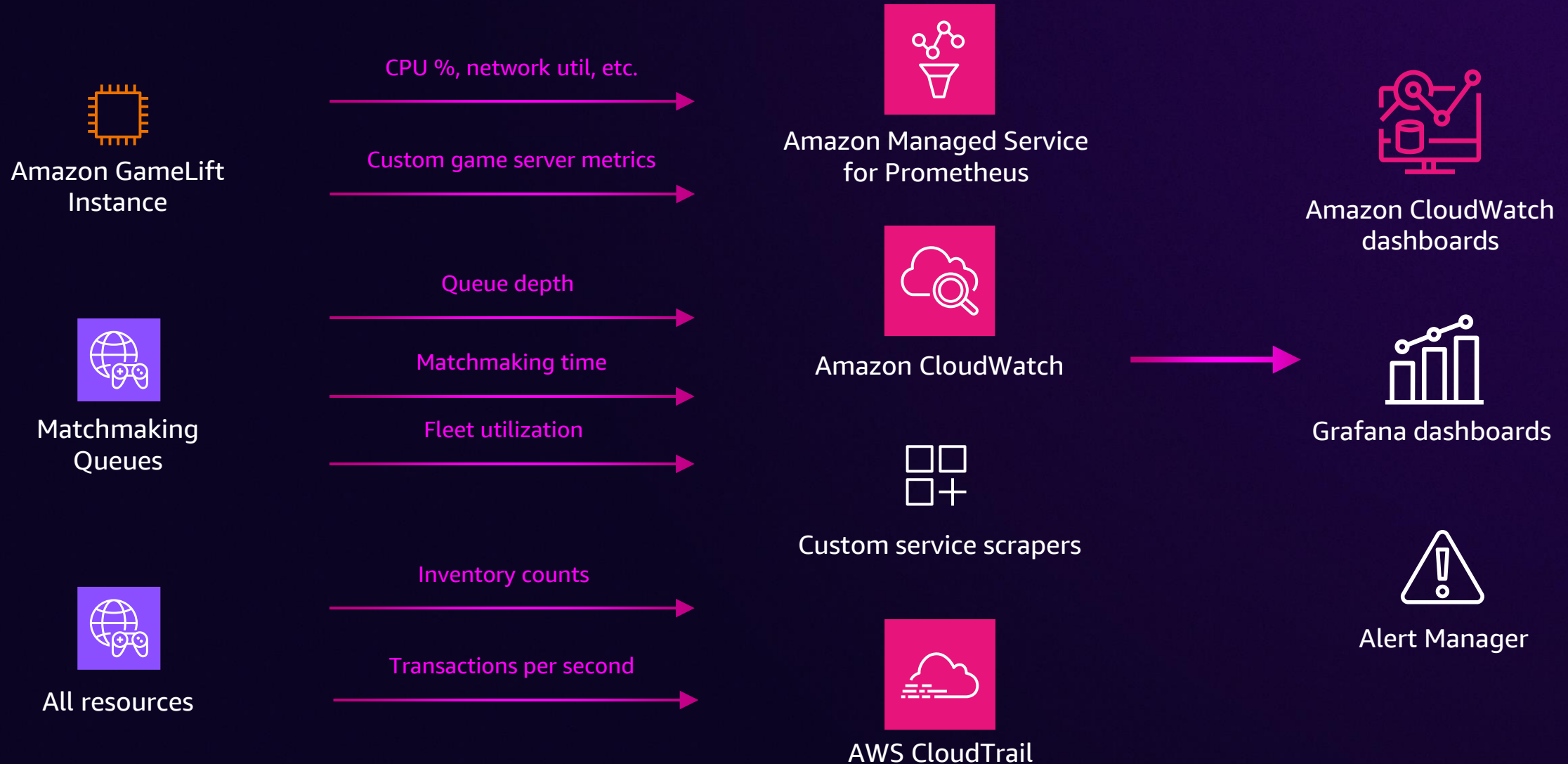




# Operational metrics



# Operational metrics





# Hunters GameLift Tool: FleetDeployer



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# Hunters tooling: FleetDeployer



We want the whole studio to have deployments

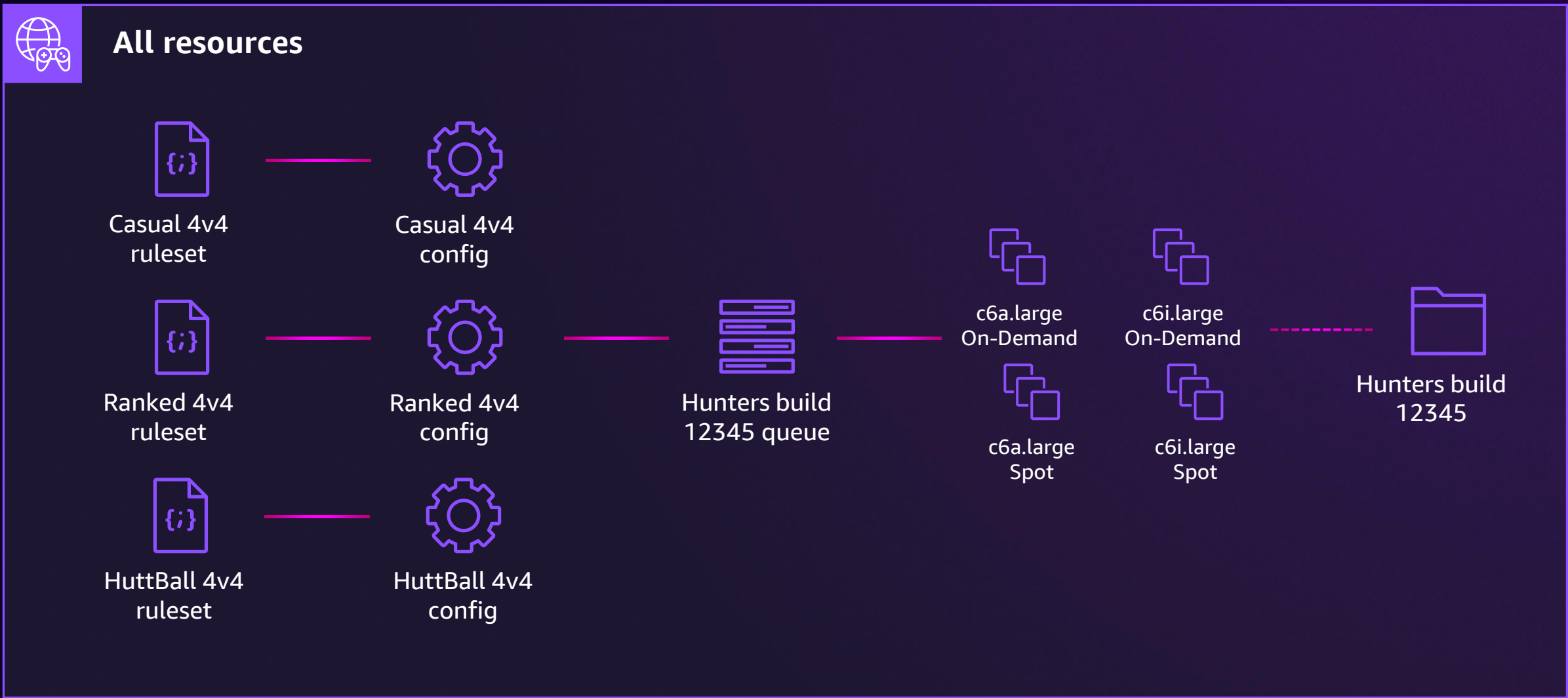


Allow developers to modify and deploy Amazon GameLift resources without console access



FleetDeployer acts as Web and Hunters-API layer between our studio and GameLift

# Hunters tooling: FleetDeployer



# Hunters tooling: FleetDeployer



## All resources

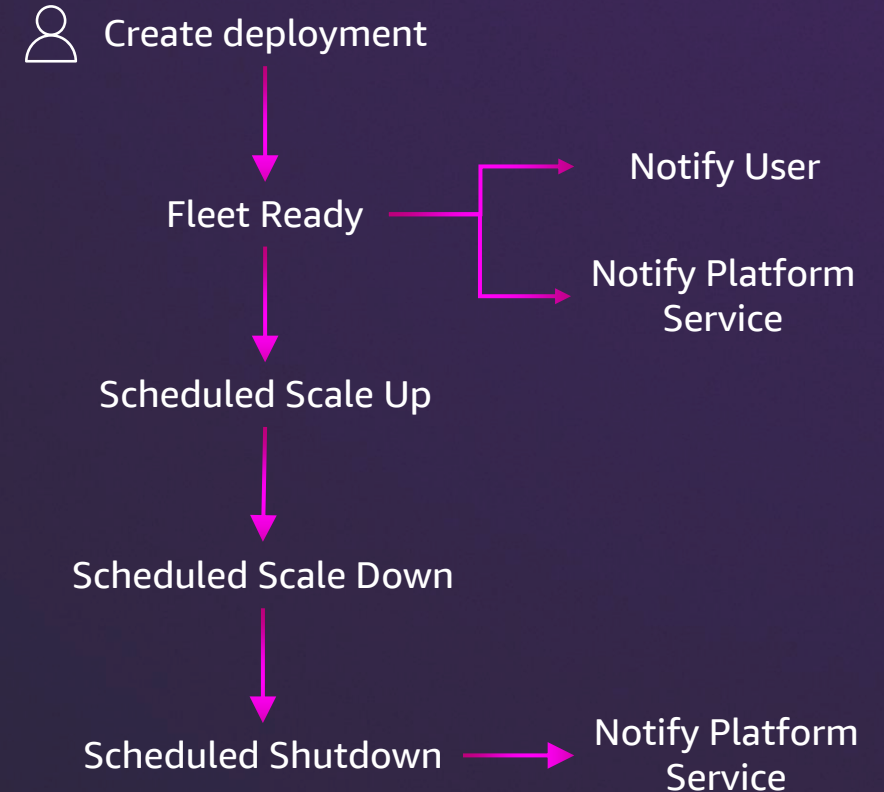


Hunters deployment group

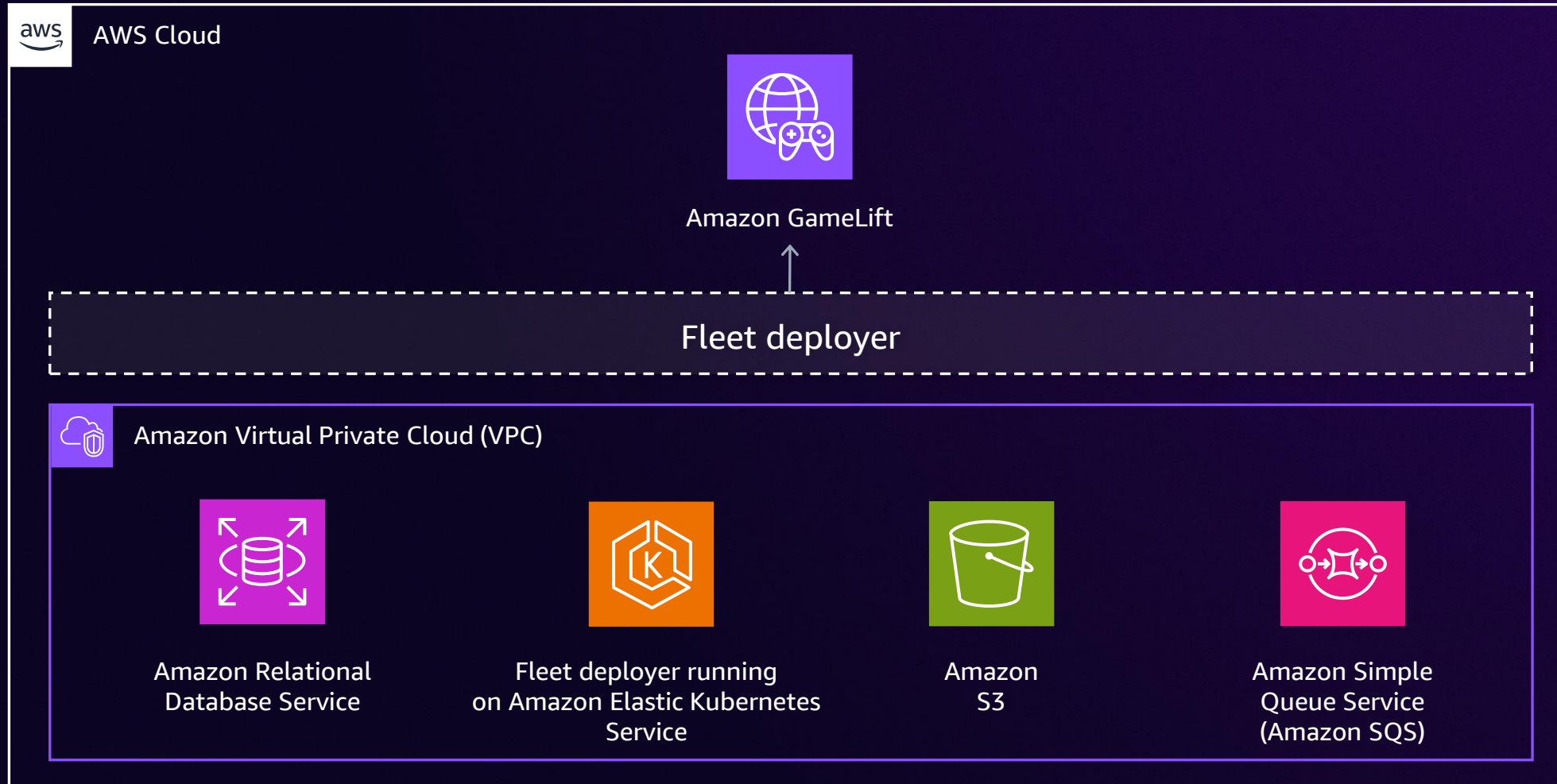
### Deployment metadata

```
{  
  owner: "ahardjono"  
  description: "demo build"  
  scale-up: 2024-12-02 10:25  
  scale-down: 2024-12-02 10:25  
  auto-shutdown: allowed  
  shutdown: 2024-12-03 23:00  
}
```

### Deployment timeline



# Hunters tooling: FleetDeployer





# Hunters tooling: FleetDeployer

Gamelift Comment

Hunters deployment test

Fleet Regions

eu-west-1 x us-east-2 x

This specifies which regions the fleets will be created in. Click to select multiple

Instance Types

c5.large x

This specifies which instance types the fleets will use. Click to select multiple

Server Processes Per Instance.

10

UE Dedicated servers per VM. Leave this value as 0 to let the system decide on the number.

CREATE DEPLOYMENT

Home

Builds

Steam Uploads

Deployments

Perforce

Account

Other

Gamelift Stats

Matchmaking Rules (Max 400)

82

Matchmaking Configs (Max 400)

82

Game Session Queues (Max 50)

30

Fleets (Max 300)

86



# Hunters tooling: FleetDeployer

Home

Builds

Steam Uploads

Deployments

ActiveDeployments

Deployments

FleetUtilisation

Perforce

Deployments

Fleets Available for over 24 hours

BuildJob#	Environment	Comment	Shutdown Time	Last Played	Last Modified
▶ <a href="#">60784</a>	dev1	Test new character updates	30 Nov 2024 - 02:12	24 minutes ago	35 days
▶ <a href="#">61154</a>	playtest-capturing	Trailer deployment	12 Dec 2024 - 11:37	4 hours ago	15 days
▶ <a href="#">61265</a>	loadtest	Loadtest release candidate	21 Dec 2024 - 13:18	7 days ago	12 days
▶ <a href="#">60032</a>	playtest-content-dev	Long term 3.0 Playable Fleet	31 Dec 2024 - 09:39	6 hours ago	70 days
▶ <a href="#">61387</a>	dev1	Matchmaking update test	29 Nov 2024 - 11:14	20 hours ago	5 days
▶ <a href="#">61368</a>	external-staging	New map build testing	25 Dec 2024 - 19:10	2 days ago	1 day



# Pre-launch considerations

- Dev - Soft launch - Production
- Dashboards
- Load Test
- Pre-Allocation
- Talk to the GameLift team



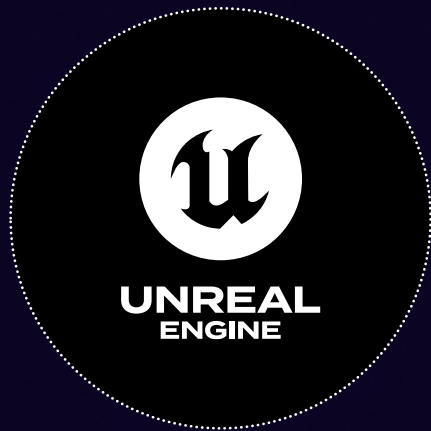


# The development process



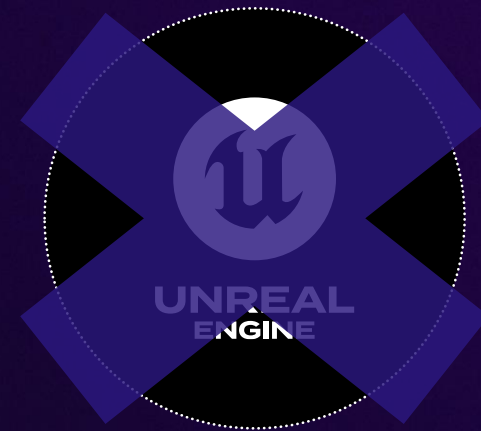


# Integration points



Unreal game server

Hunters  
platform  
services



Unreal game client  
No Amazon GameLift  
integrations needed

# Unreal server integration



## Required

- InitSDK
- ProcessReady
- onStartGameSession
- ActivateGameSession
- ProcessingEnding
- onProcessTerminate

## Optional

- onHealthCheck
- AcceptPlayerSession
- RemovePlayerSession

## Not implemented on Hunters

- GetComputeCertificate

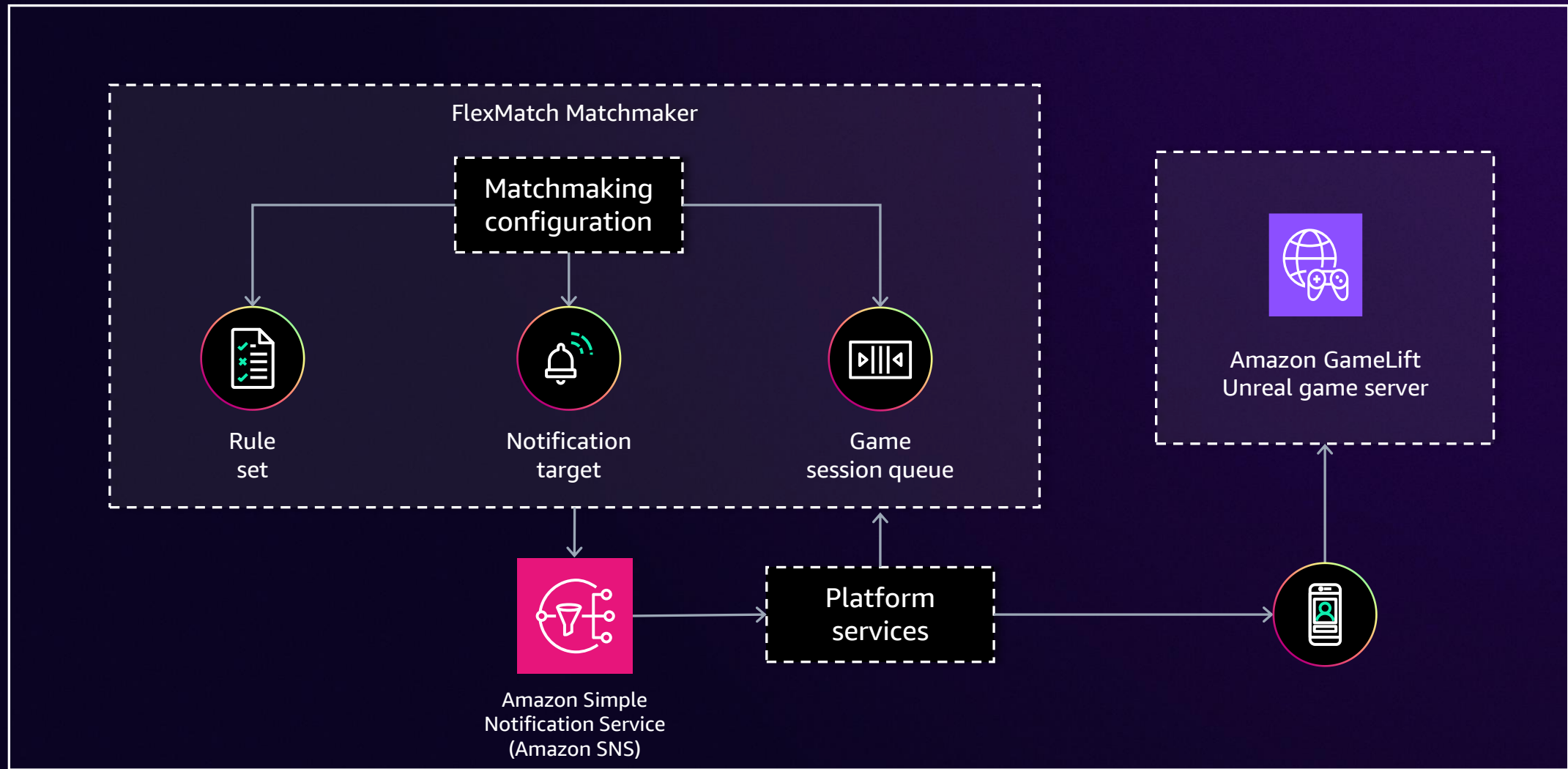
# FlexMatch events



- MatchmakingSearching
- MatchmakingSucceeded
- MatchmakingTimedOut
- MatchmakingCancelled
- MatchmakingFailed
- PotentialMatchCreated
- AcceptMatch
- AcceptMatchCompleted

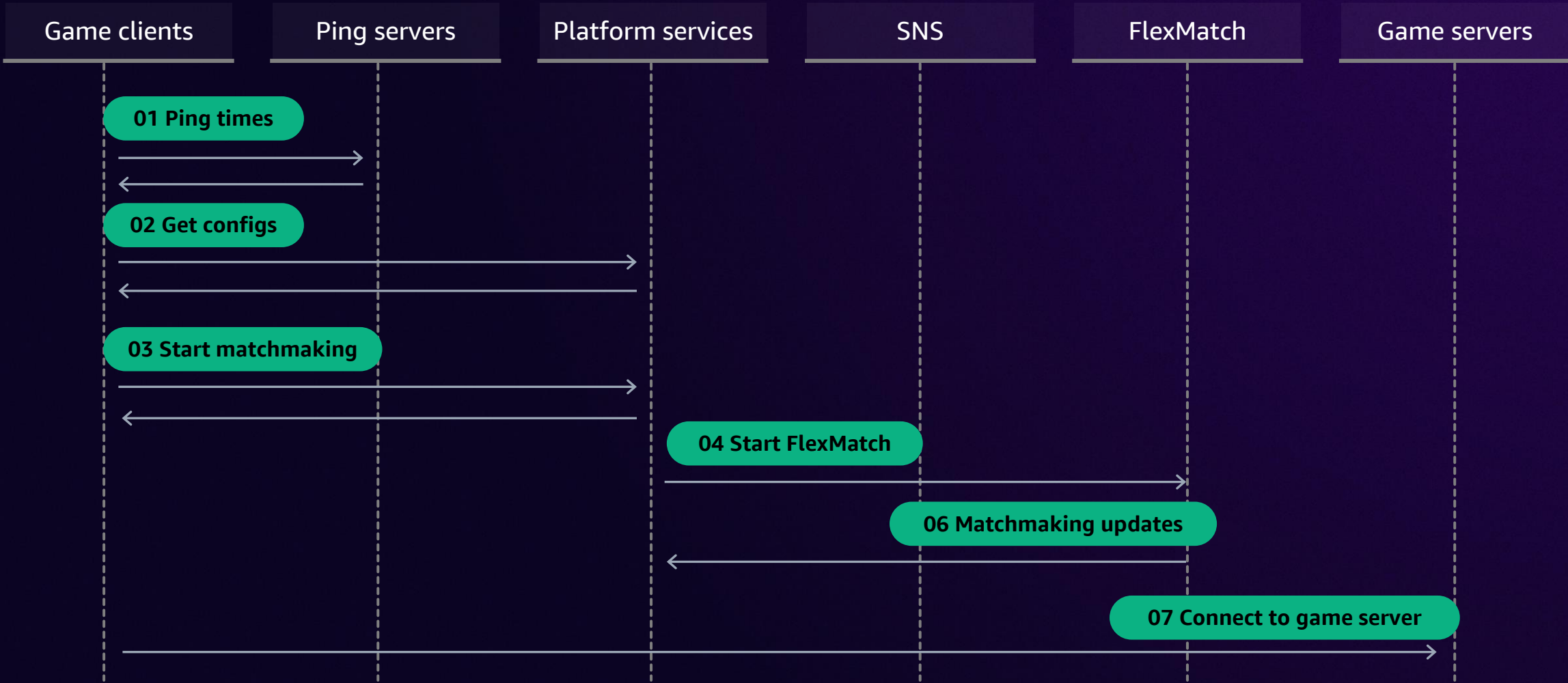


# Platform services integration

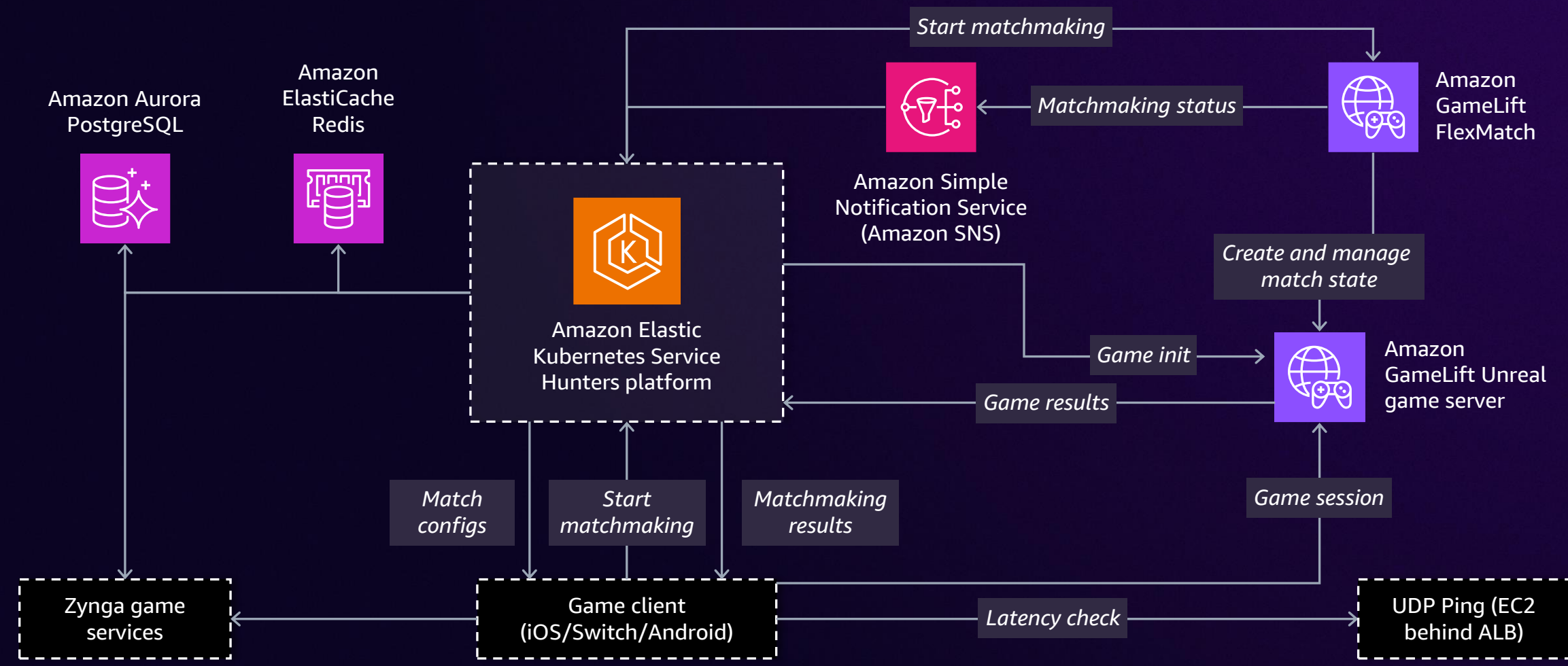




# Matchmaking flow



# Star Wars: Hunters architecture



# Launch successes





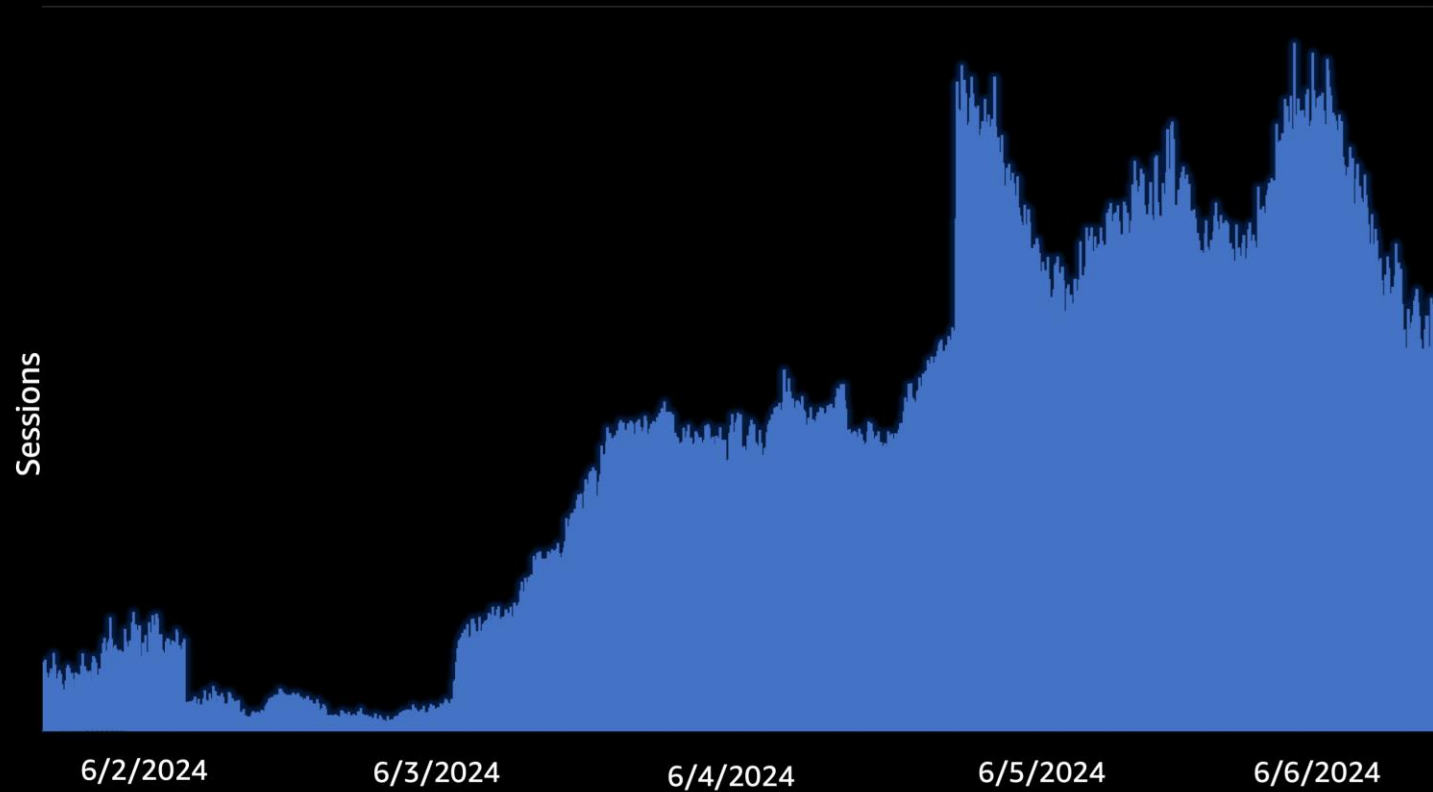
# Launch successes



- Scaling met player demand
- Capacity available to meet launch requirements
- Leveraged Amazon GameLift scaling to optimize costs
- Real-time matchmaking rules adjustment
- Support from the Amazon GameLift team

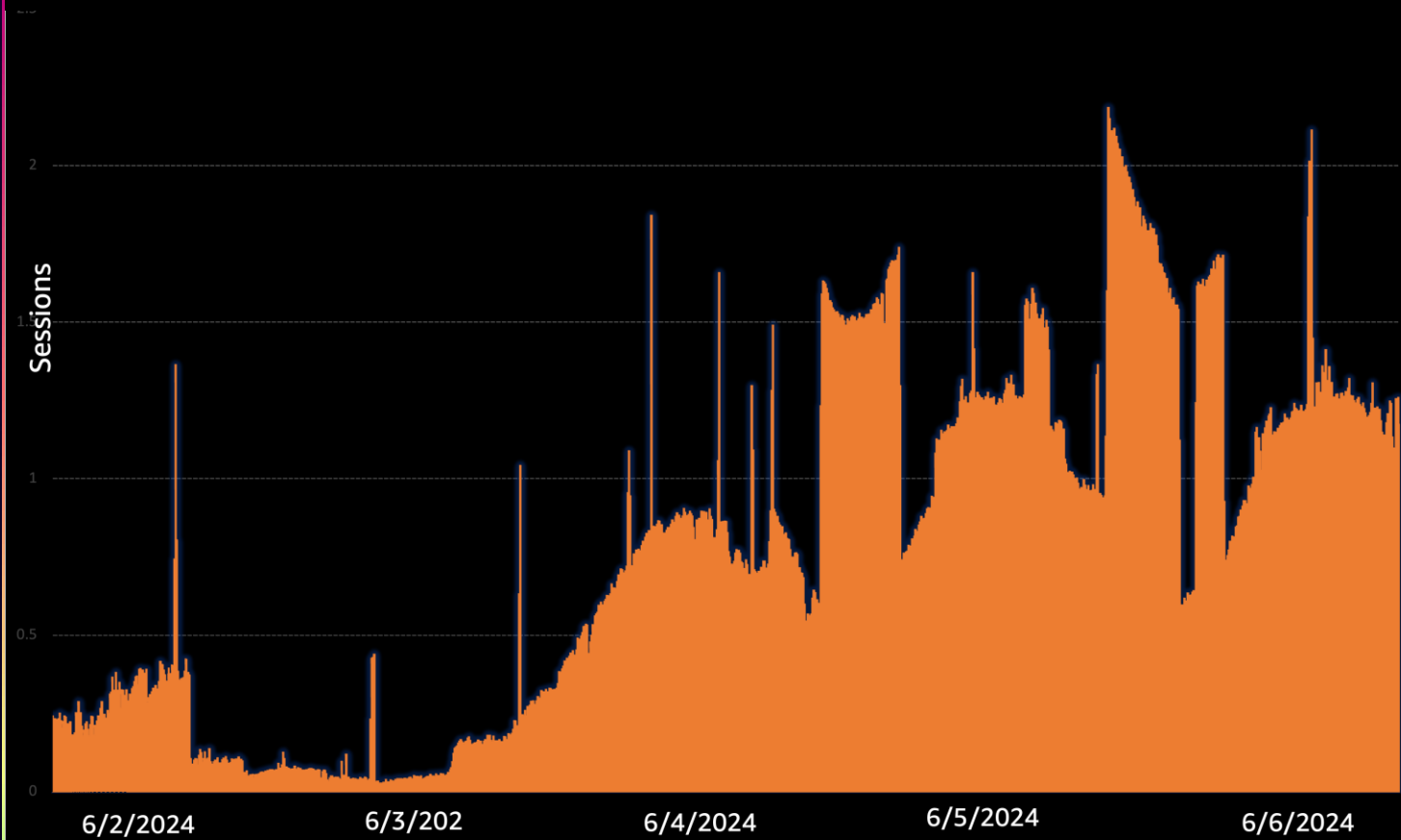
# Launch metrics

## Current player sessions



# Launch metrics

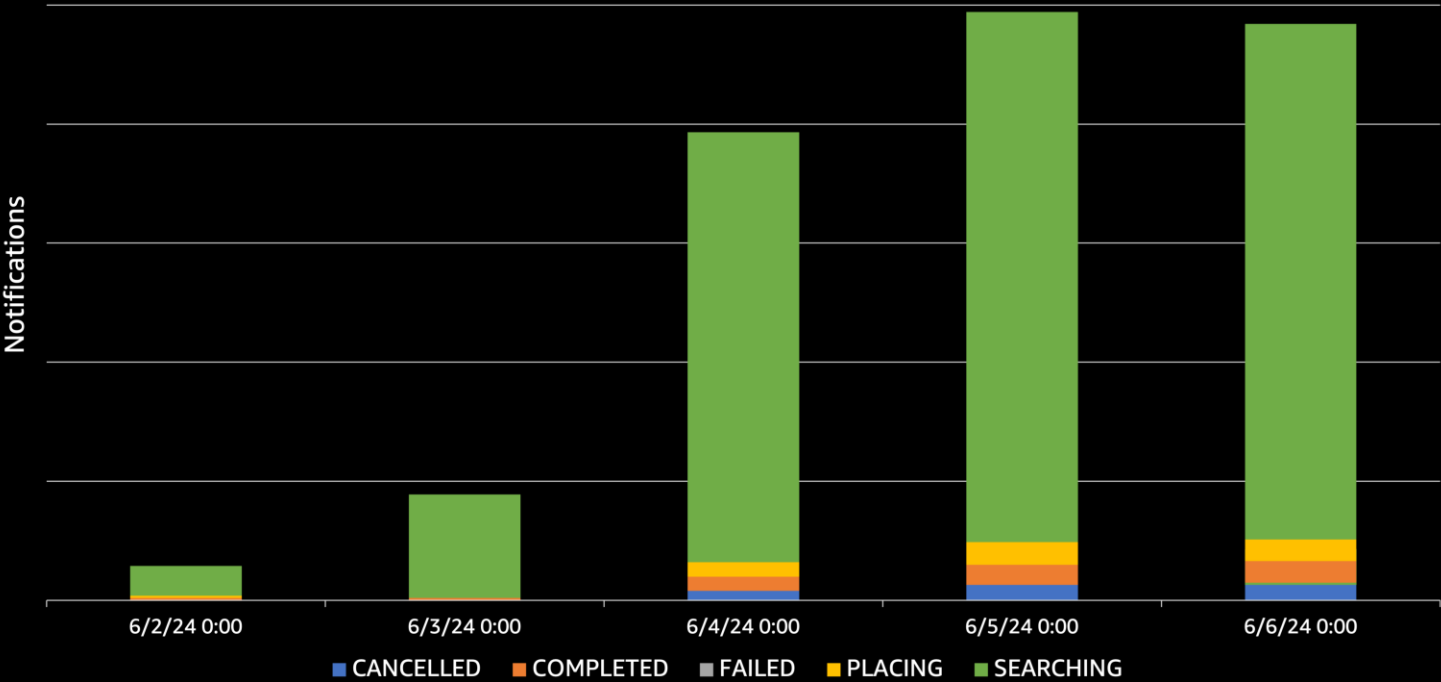
## Active game sessions





# Launch metrics

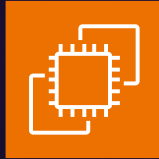
## FlexMatch notification status



# Key launch features



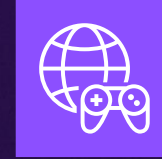
**Amazon GameLift  
multi-region fleets**



**Amazon EC2  
Spot Instances**



**Amazon  
CloudWatch  
metrics**



**Amazon GameLift  
FlexMatch**

# Launch challenges



- Fine-tuning matchmaking requirements
- Test cycles to meet requirements with matchmaking rules
- Matchmaking simulator
- Fleet deployer tool



# Amazon GameLift team support



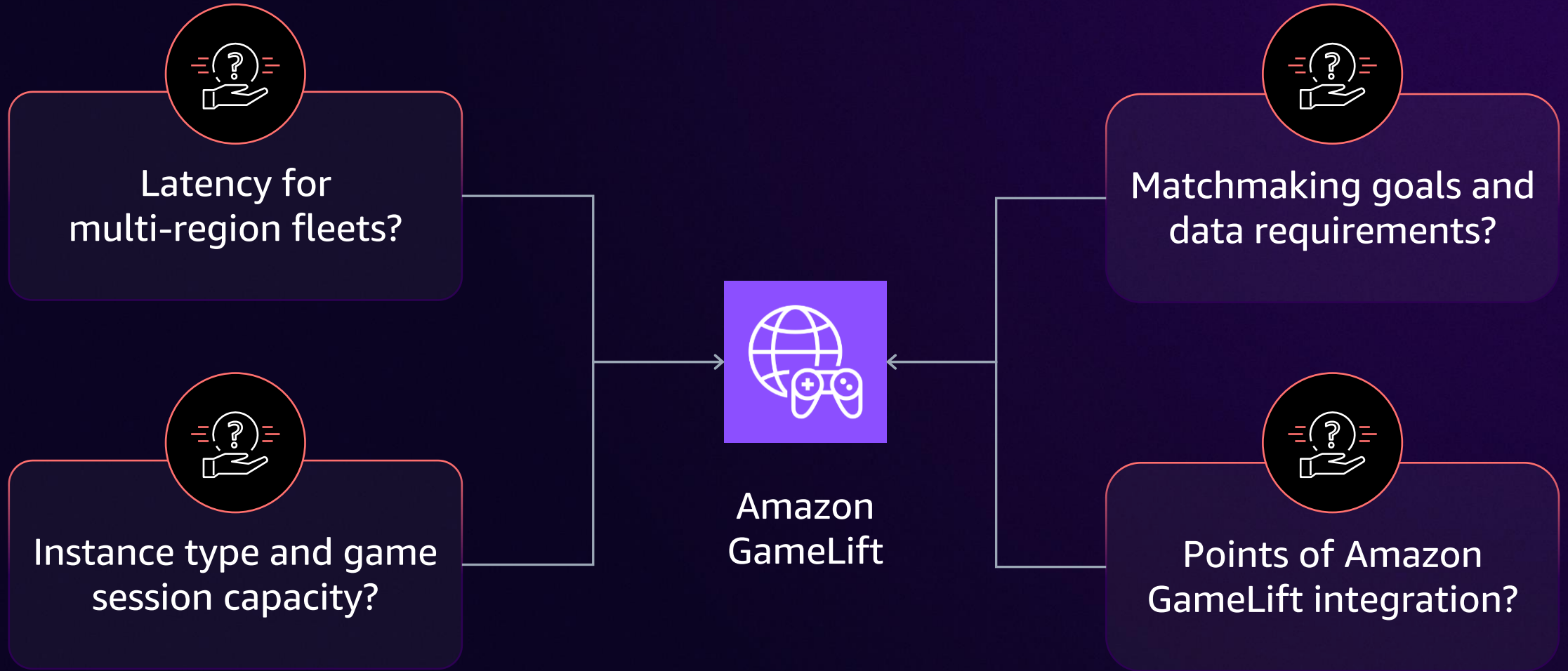
- Engaged throughout game development lifecycle
- Architecture review support
- Confirm appropriate capacity, API limits in place
- Launch support



# Game studio recommendations

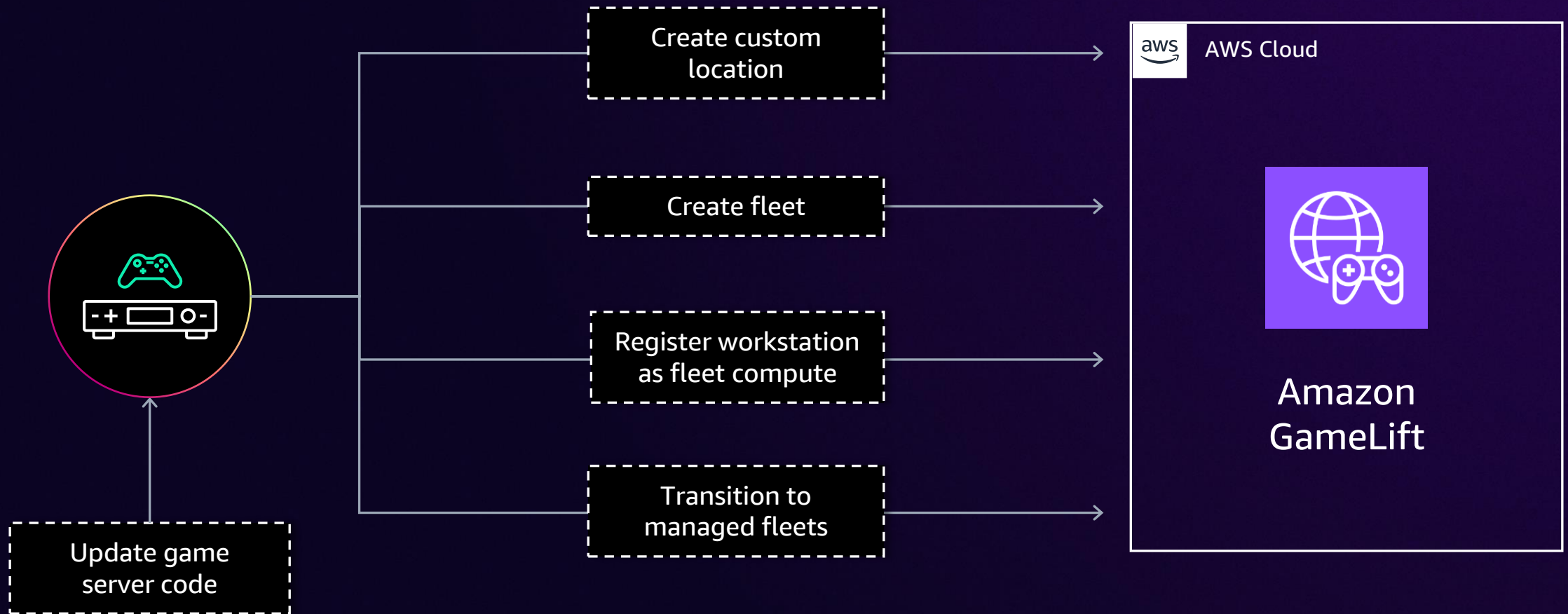


# Implementation considerations





# Amazon GameLift Anywhere



# Getting started with Amazon GameLift



Getting started  
with Amazon  
GameLift



Amazon  
GameLift  
workshops



Amazon  
GameLift toolkit  
GitHub repo



Amazon  
GameLift  
Anywhere

# Thank you!



Please complete the session survey in the mobile app

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