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CMP322-R

Deploying cost-effective, scalable video games on Kubernetes

Yahav Biran

Principal Solutions Architect
AWS

Yuval Dovrat

Sr. Manager, Solutions Architecture
AWS

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Agenda

- Multiplayer game types
- Let’s play
- MMO games technical challenges
- AWS can help!
- Solutions whiteboarding and overview

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Multiplayer game types

- FPS/racing
- Casual
- Massively multiplayer online game (MMO)

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Let’s play a game



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Tech challenges for MMOs

- Expensive to operate – lucrative as they get popular
  - Dynamic scale
  - Affordable compute
  - Serverless (database and build farms)
- Persistent simultaneous in-game events
  - Need for consistent data store
- Massive growth potential
  - Rapid scaling of compute and data store

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How AWS can help

BUILD & DEPLOY – PAY AS YOU GO

- Utilize AWS EC2 Spot instances
  - Save up to 90% of compute cost when testing and prototyping
  - Save up to 60% in production with Spot capacity optimized
- Store the game's state and transactions on serverless infrastructure
  - Reduce database costs during nonworking hours
  - Dynamic, seamless database scaling in production

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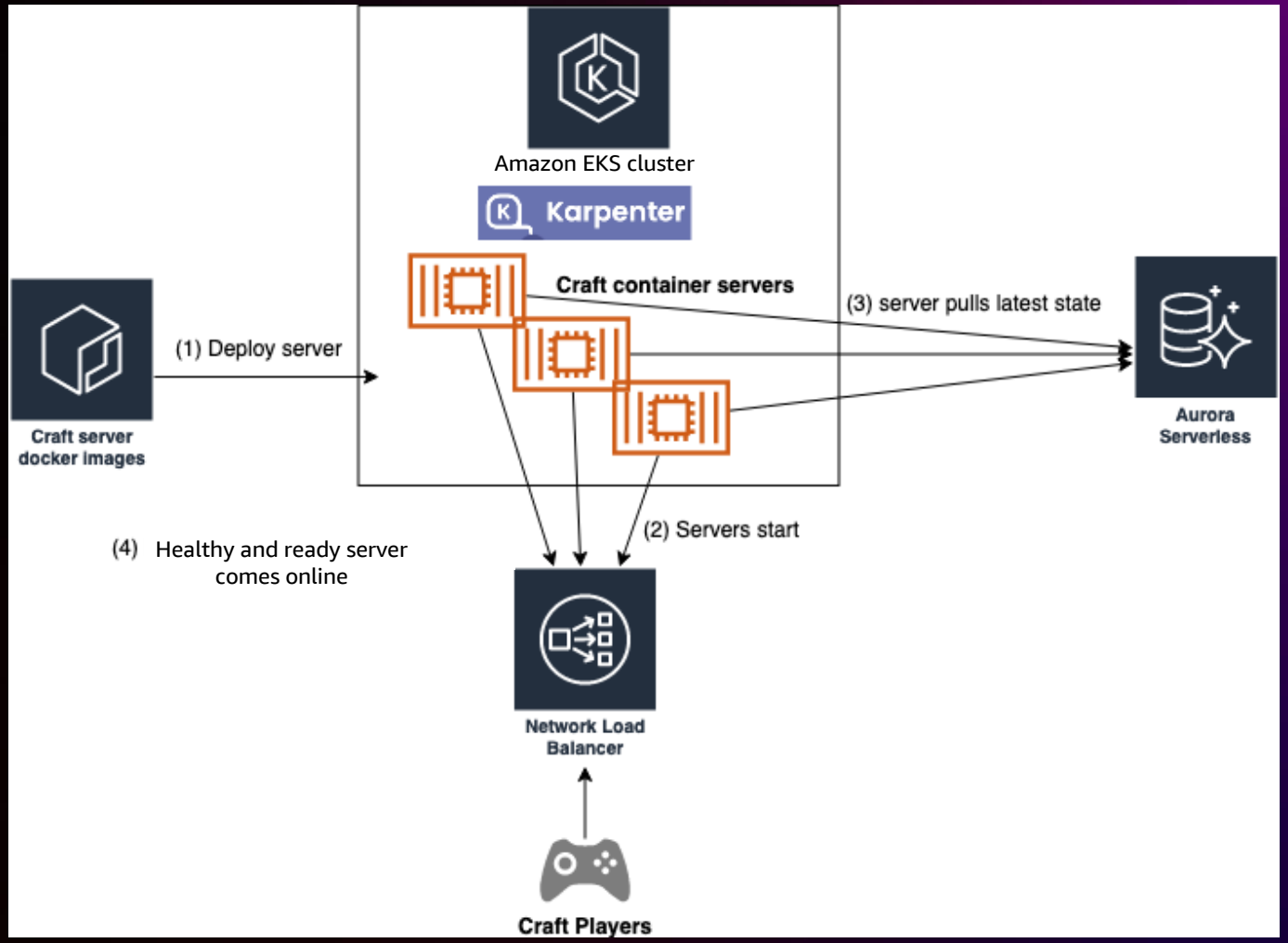
Solution architecture



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Dynamic scaling

- Karpenter allocates the most affordable compute
- It launches the right instance size to handle your players' needs
- The new servers becomes online following a proper readiness probe



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Amazon EC2 Spot – Considerations

- Listen to interruption notifications (DaemonSet)
- Handle SIGTERM inside the game server
- Configure readiness/liveness probes and NLB target groups

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Game state – Considerations

- The game state needs to be consistent
- The game state needs to scale linearly alongside the compute

Options to meet the requirements

- NoSQL options: DynamoDB, Amazon DocumentDB
- SQL options: Amazon Aurora Serverless – MySQL or PostgreSQL

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Key takeaways

- Network Load Balancer
- Amazon EKS
- Karpenter
- Amazon EC2 Spot
- Amazon Aurora Serverless
- Only for video games?



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Thank you!

Yahav Biran
birayaha@amazon.com

Yuval Dovrat
yuvald@amazon.com



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