AWS re:Invent

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The journey to adopt cloud-native architectures for hyperscale

Neeraj Kumar (He/Him)
Principal SA
Amazon Web Services

Anuj Gupta (He/Him)
Principal SA
Amazon Web Services

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Learning objectives

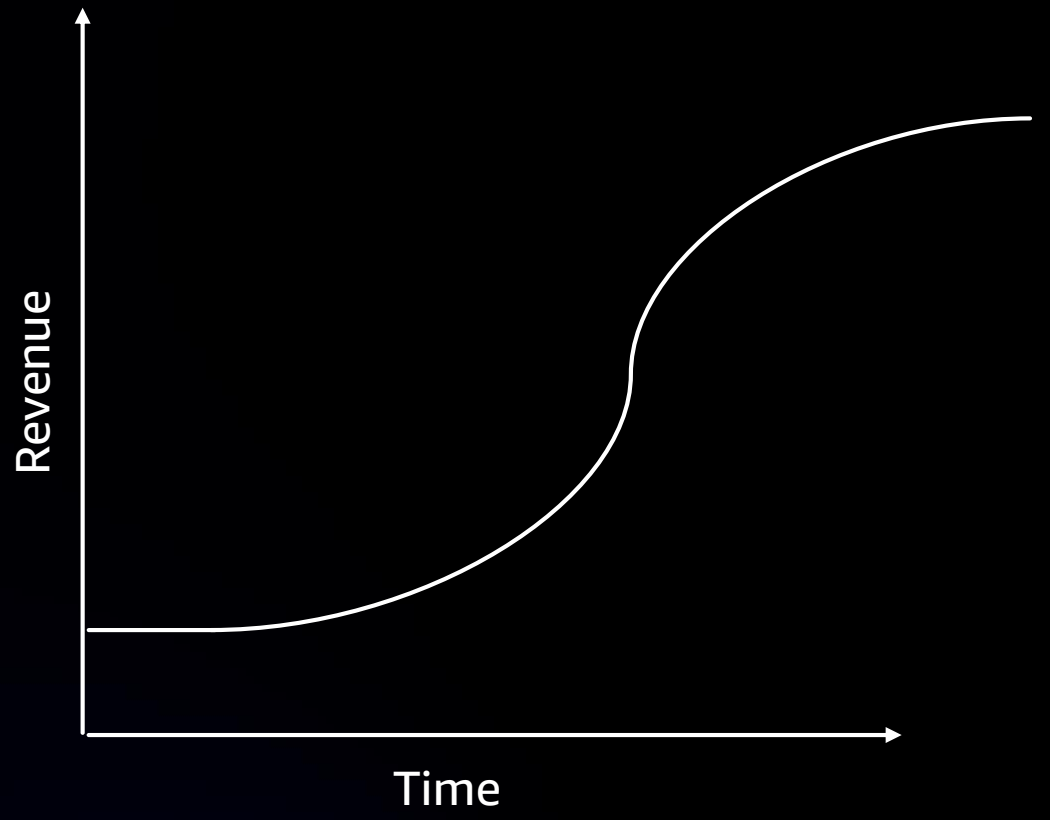
- Why do you need a journey to adopt cloud-native architecture?
- How to address hyperscale
  - How to improve resilience and scale in monoliths
  - How to leverage domain-driven design for decomposing monoliths to achieve independent scaling of services

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Hypergrowth

"Hypergrowth happens at the steep part of the growth curve, after the initial product or service offerings are defined and before the business matures."



Source - https://www.forbes.com/sites/forbestechcouncil/2020/08/27/how-to-manage-a-hypergrowth-company

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Key challenges

- Time to market
- Scaling limits
- Inflated blast radius
- Increased dependencies and complex deployments

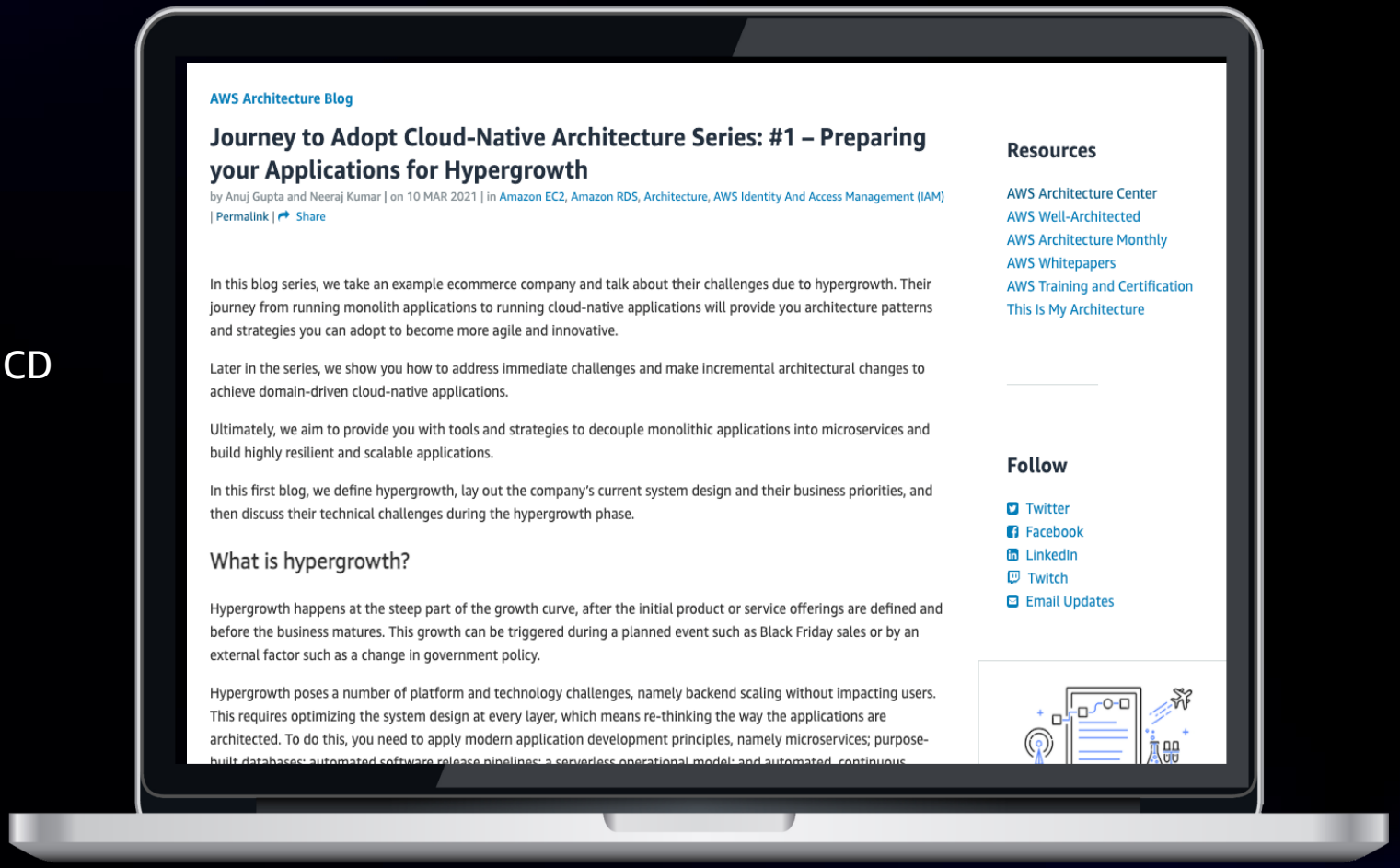
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Journey to adopt cloud-native architecture

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Journey to cloud native blog series

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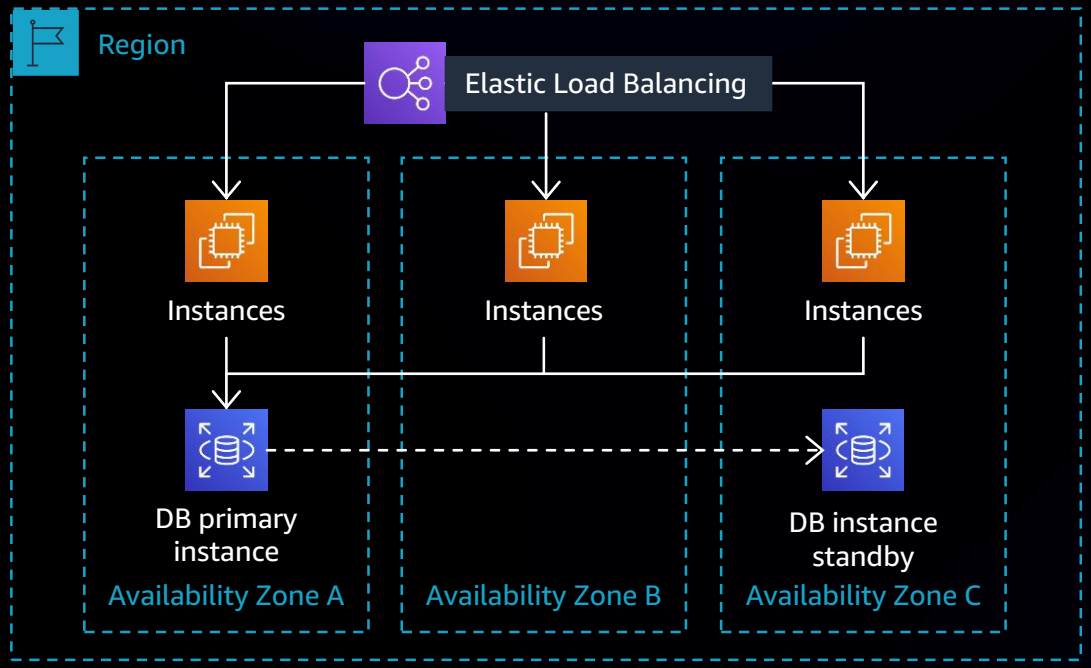
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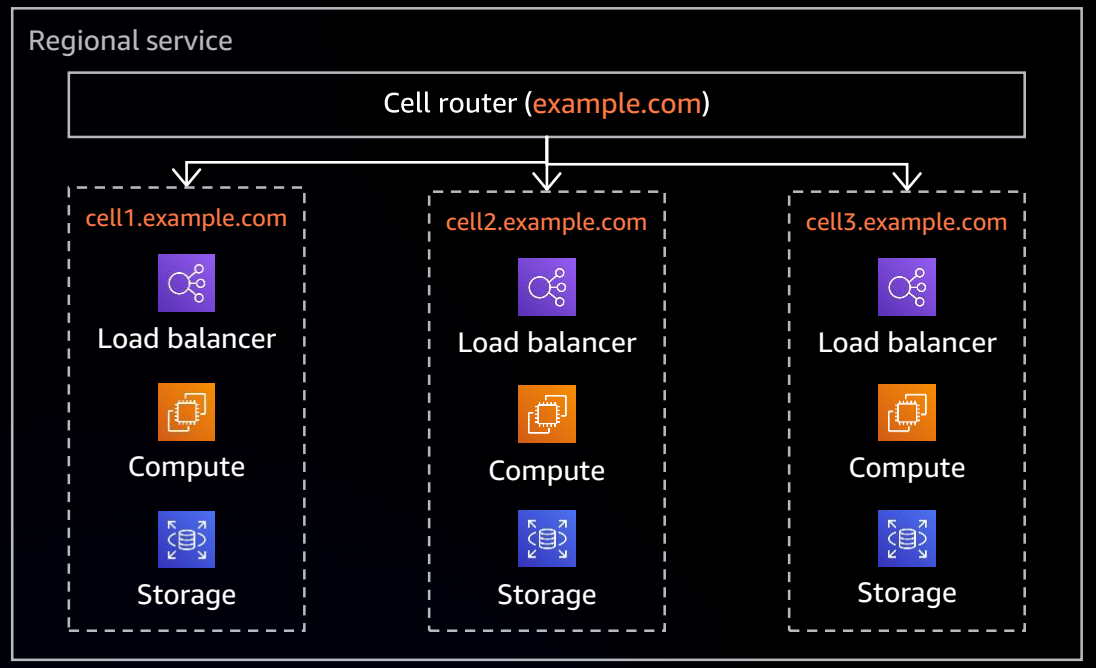
Cell-based architecture

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Cell-based architecture

WHAT IS CELL-BASED ARCHITECTURE





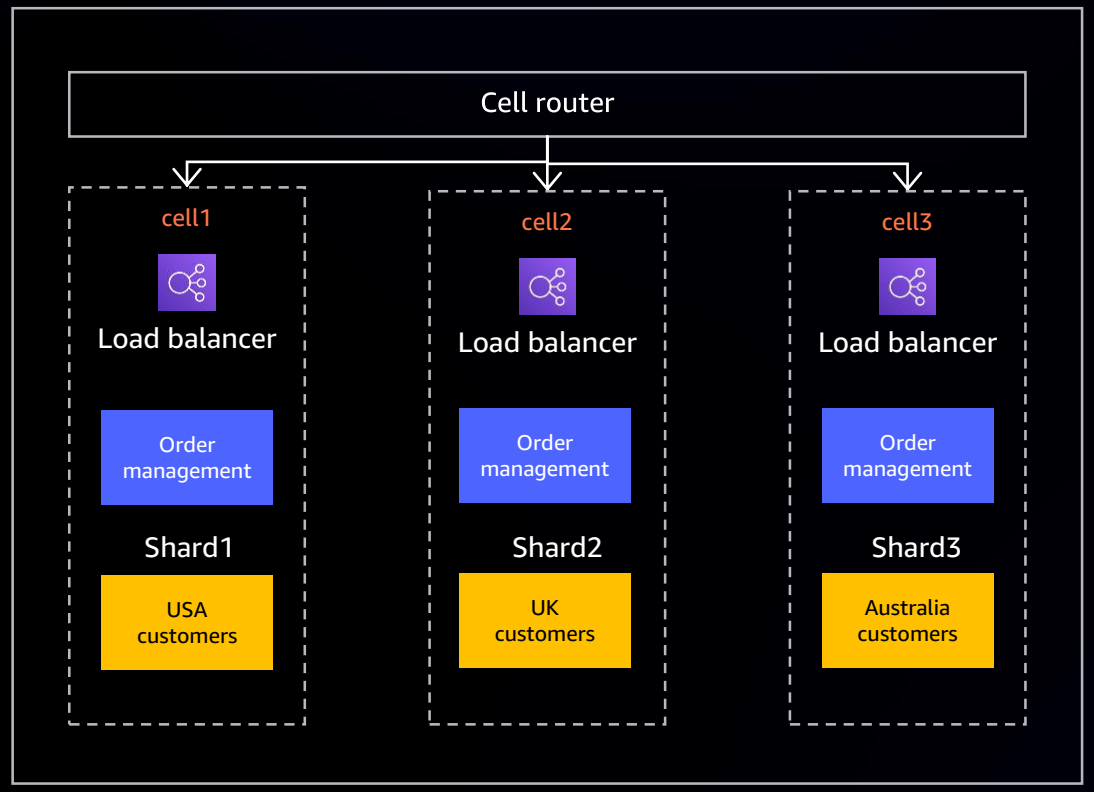
Typical service application

Cell-based architecture

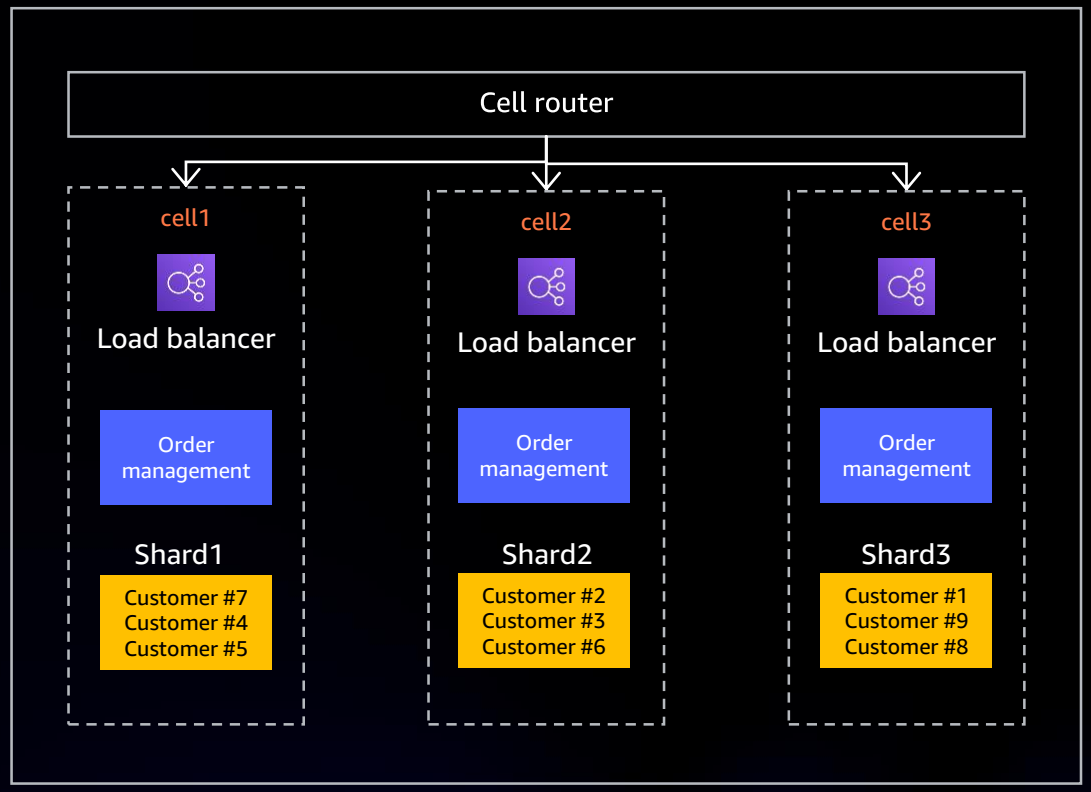
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Cell-based architecture

EXAMPLES



Geo-based cells



Shuffle sharding

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Cell-based architecture

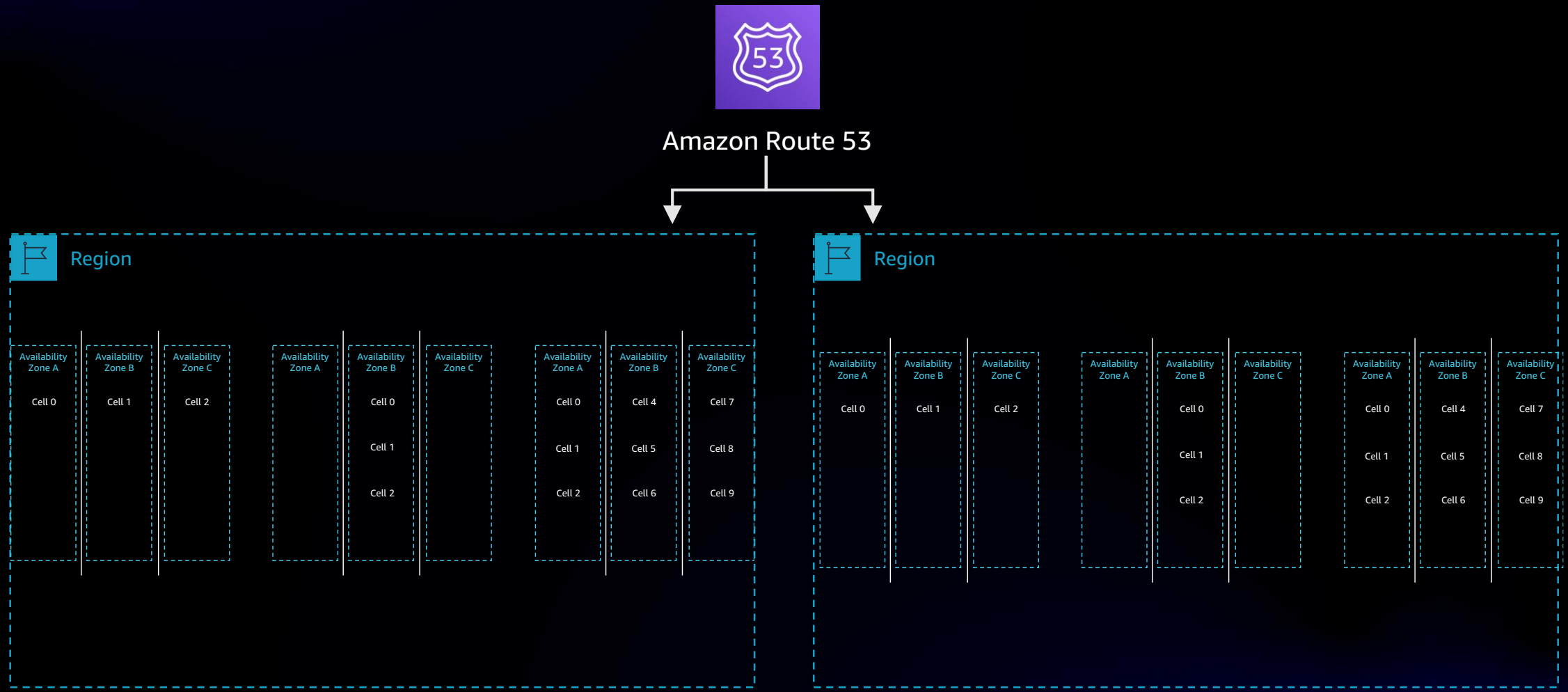
SINGLE REGION



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Cell-based architecture

MULTI REGION

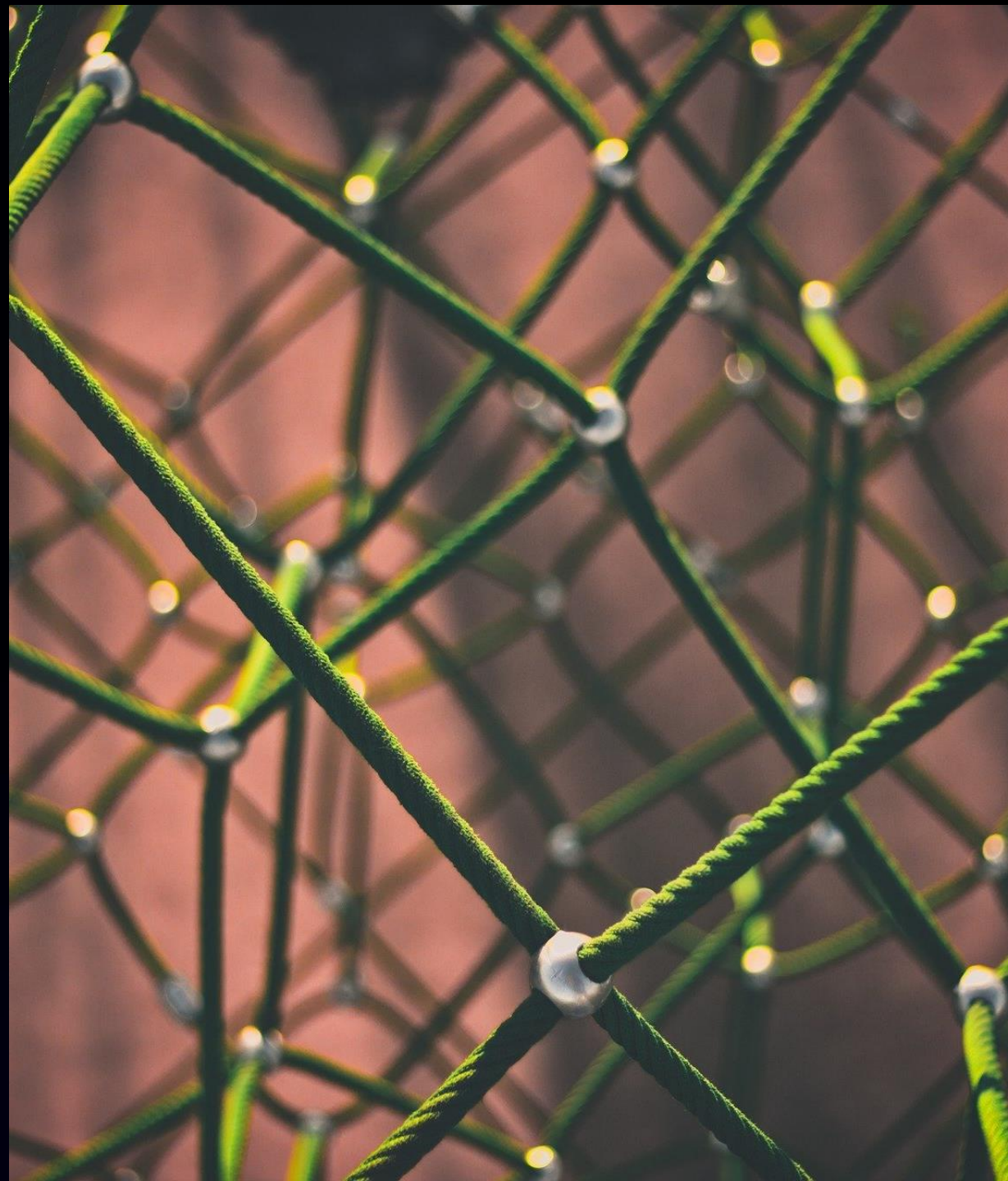


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Cell-based architecture

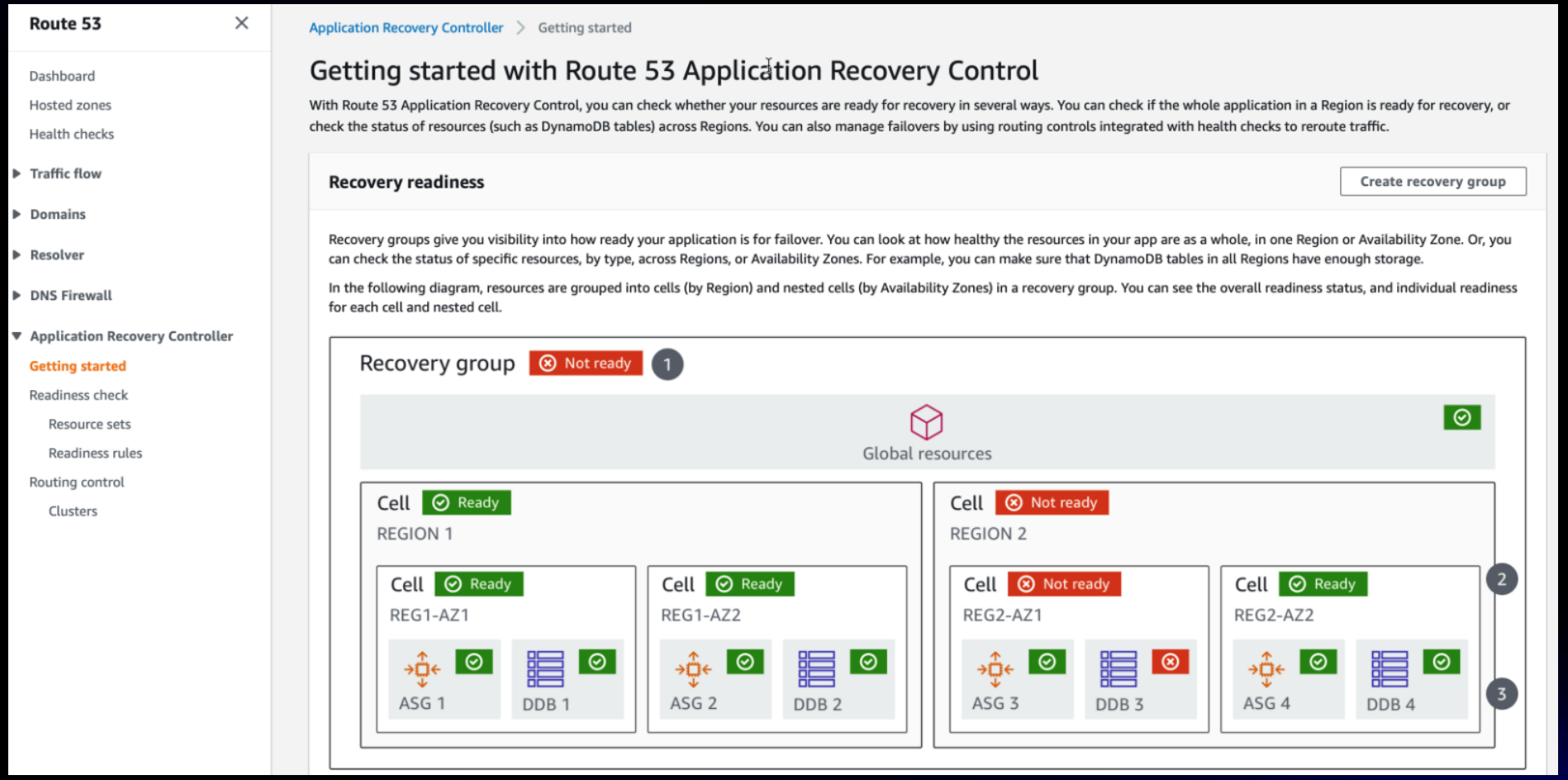
THE BENEFITS: WHY CELL-BASED ARCHITECTURE

- Control of **scale**
- Reliability **and** resiliency
- Easier **error detection** (signal versus noise)
- Contained **blast radius**



Cell-based architecture

ROUTE 53 APPLICATION RECOVERY CONTROLLER



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Domain-driven, cloud-native architecture

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> **“Monolith is not a bad design if it meets your needs.”**

Anuj Gupta, Neeraj Kumar
Solution Architect, AWS

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Microservices challenges

- Service boundaries
- Data consistency and integrity
- Network congestion and latency
- Monitoring and managing complexity
- Build, deploy, and run at scale

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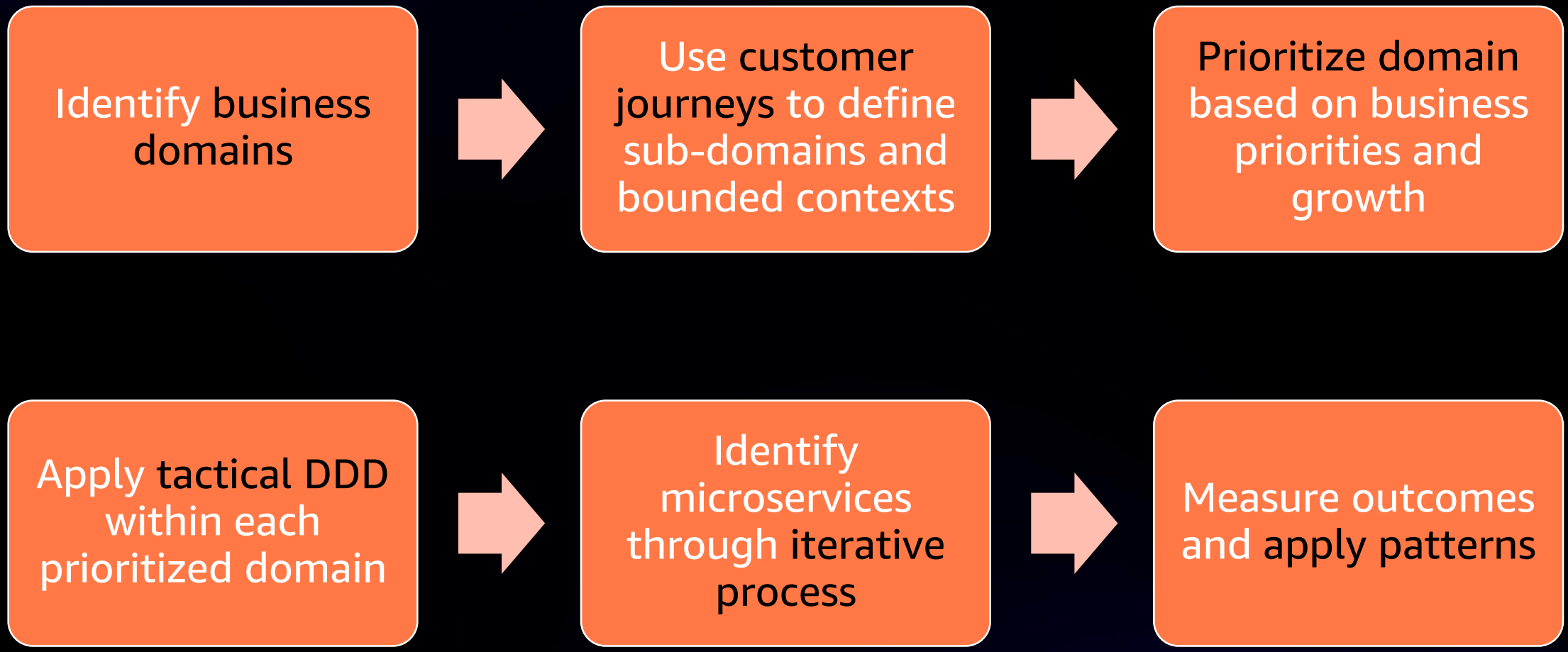
Domain-driven design (DDD)

- Focus on end-to-end customer journeys
- A ubiquitous language understood by domain experts and technology experts
- Strategic DDD helps to ensure architecture remains focused on business capabilities
- Tactical DDD provides design patterns to create domain model

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How do you approach

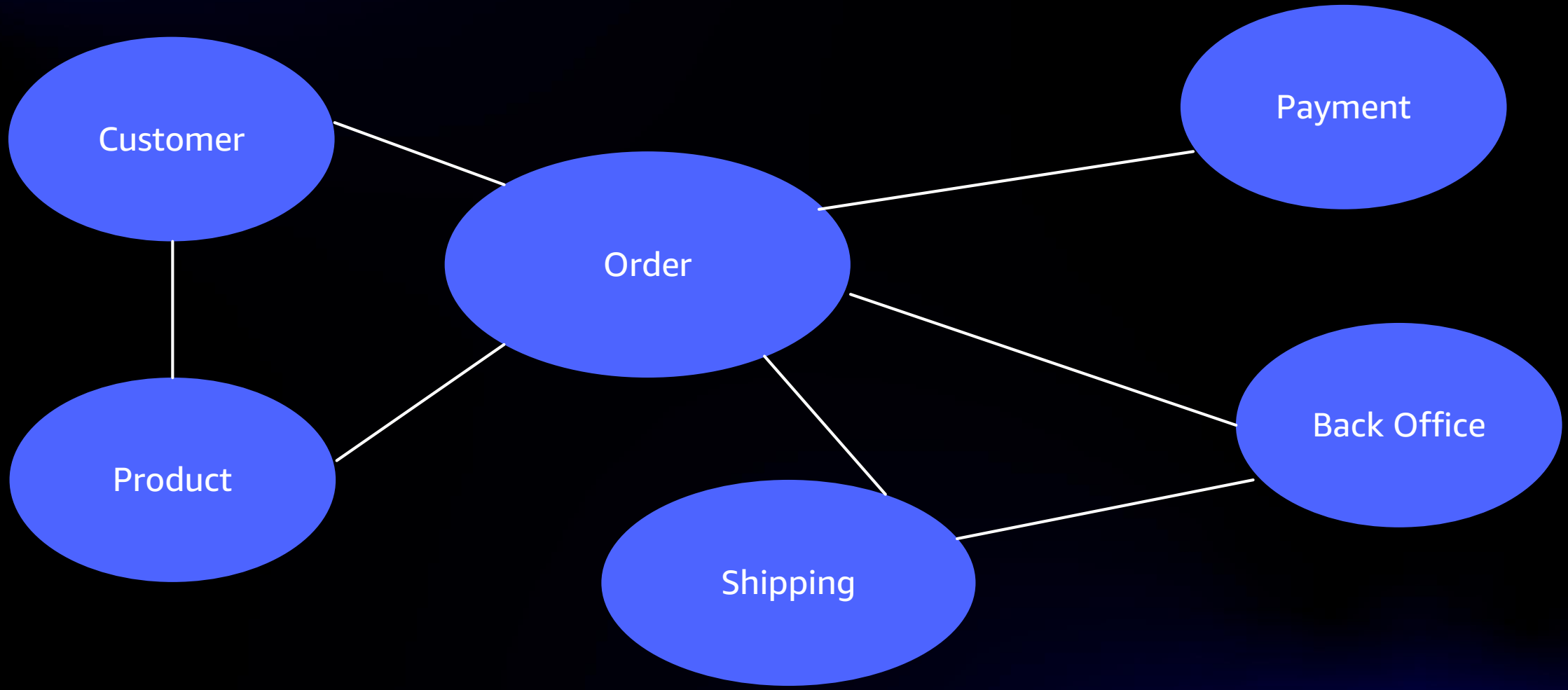


Note: This is one of the many ways to approach decomposing monolith into microservices

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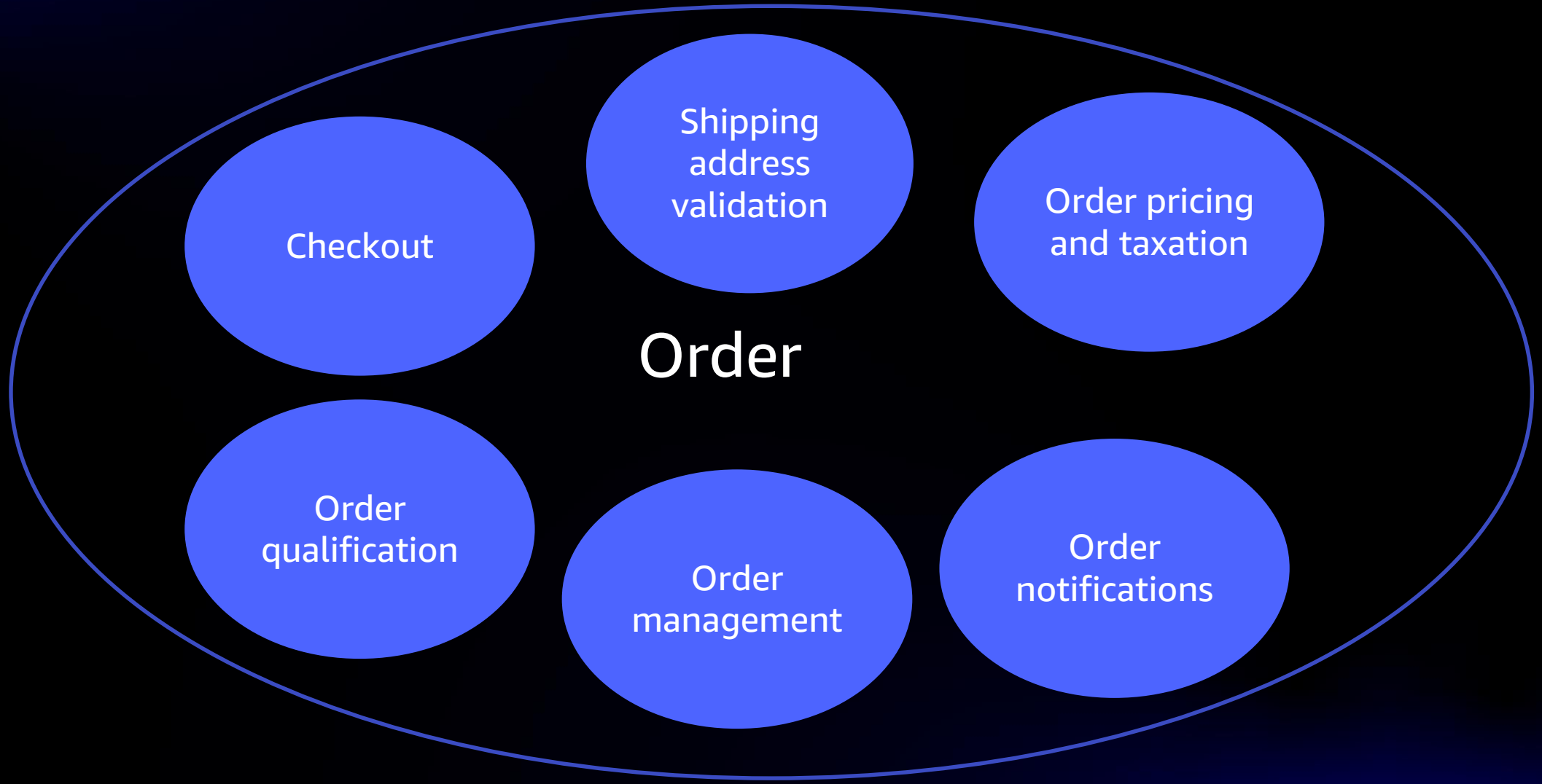
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Example ecommerce domain model



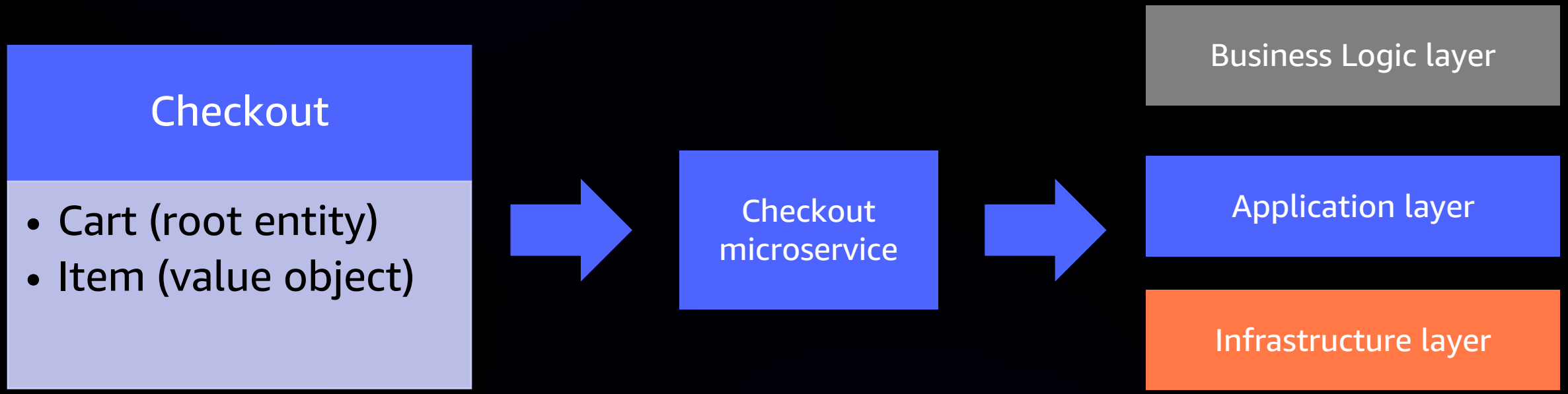
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Example ecommerce order domain



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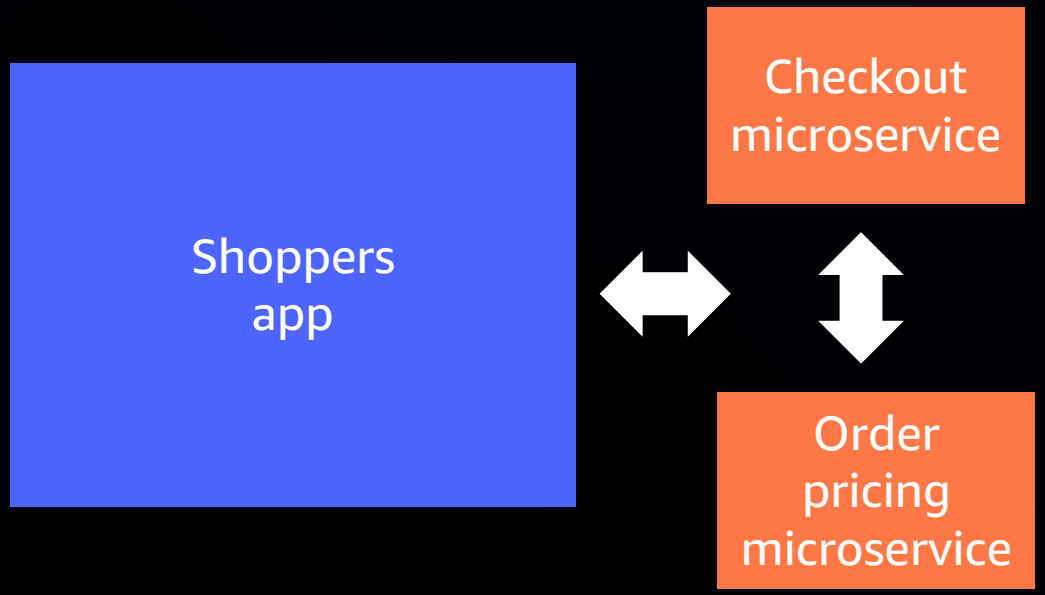
Example ecommerce: Apply tactical DDD

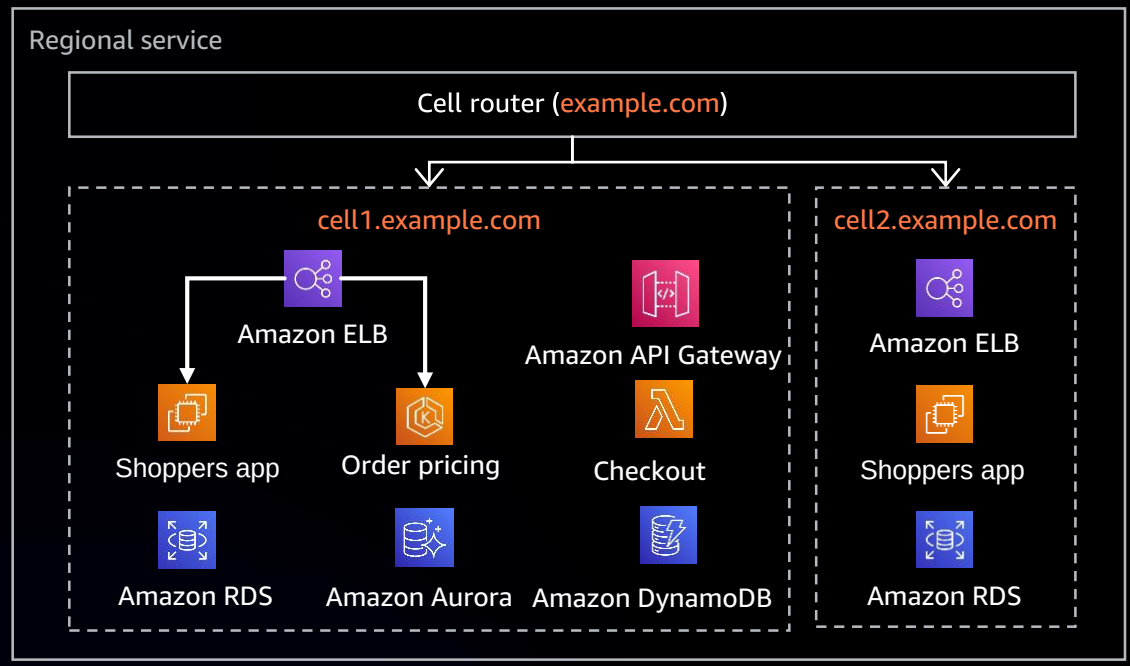


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Start small, learn, and iterate

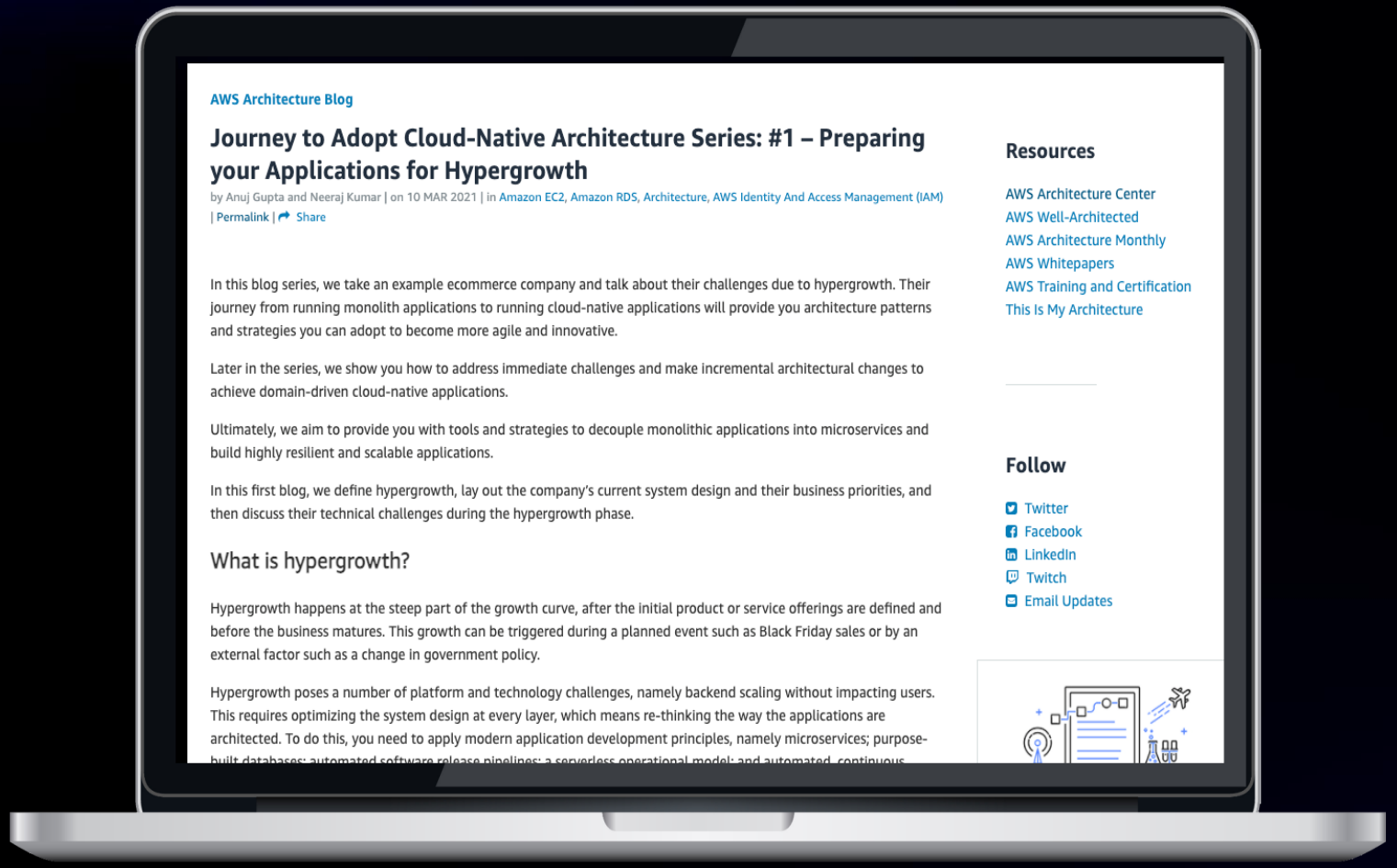




Decomposition of monolith

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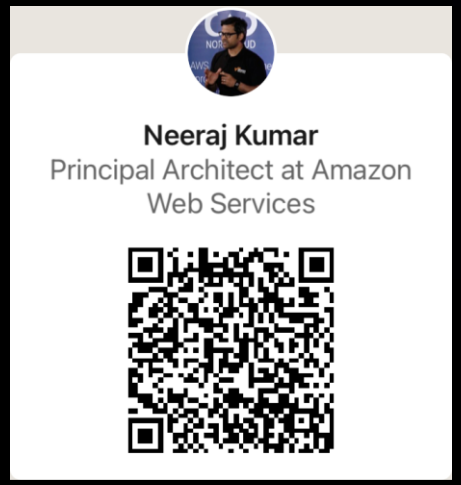


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Thank you!

Neeraj Kumar



https://www.linkedin.com/in/neerajkumar78/

Anuj Gupta



https://www.linkedin.com/in/anuj-gupta-24795310/

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