AWS re:Invent

ARC401-R

Scale up a web application

Tony Hawke
Technical Account Manager
Amazon Web Services

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Agenda

Goals for this session

Overview of the test application

How to measure load against web applications

Building the improvements

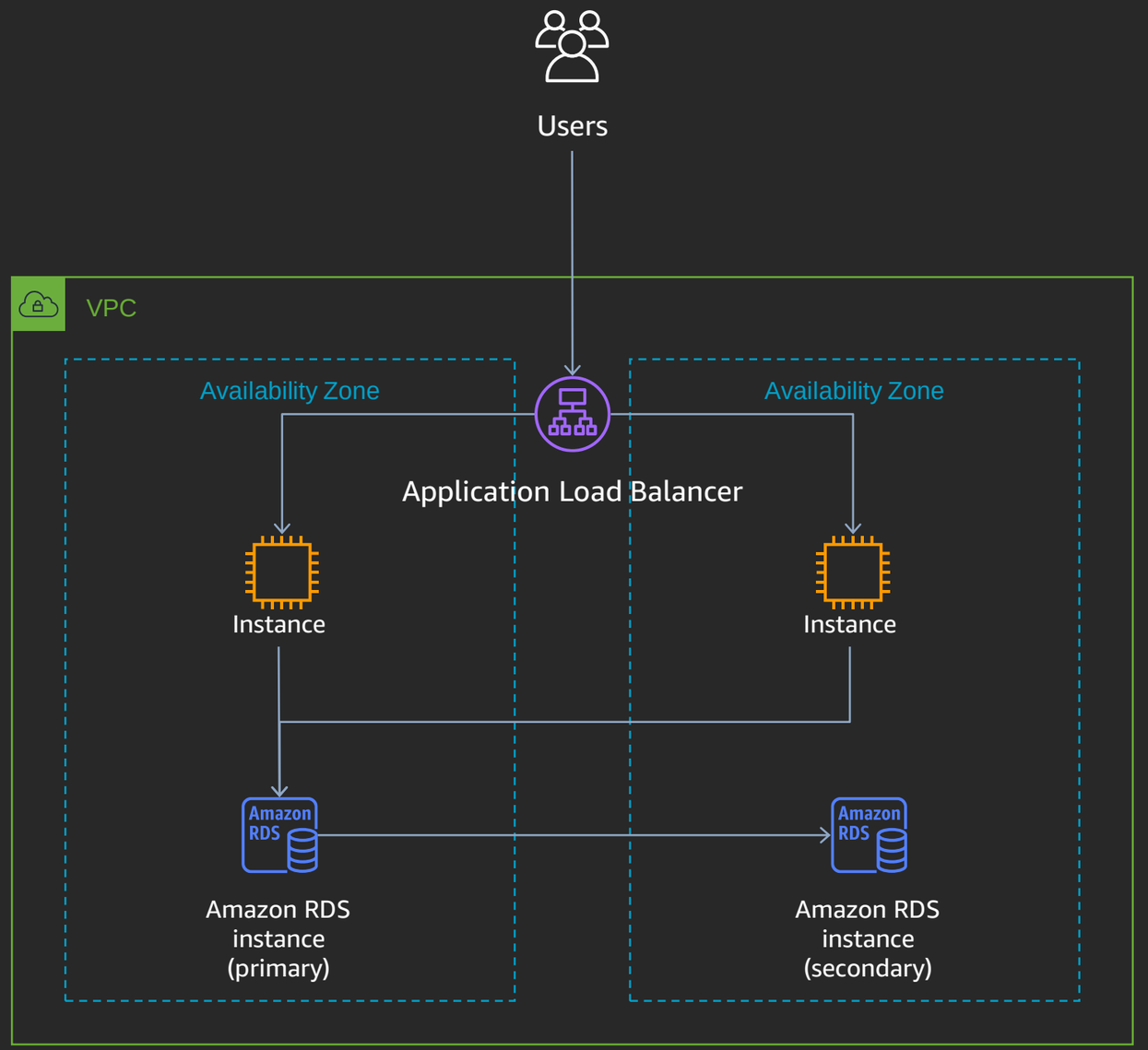
Summary and Q&A

Session goals

- Increase the load our test app can take
- Understand key technologies that help to scale web apps
- Observe benefits of serverless in large-scale apps

The test application

- 2× EC2 instances
- Node.js web app with both server-side code and API endpoints
- Multi-AZ Amazon RDS Postgres deployment



Assumptions of the test app

- Designed to illustrate a set of architectures
- Not specifically optimized for load
- To get the best out of your app, talk to your AWS account team

Measuring load on web applications

- Locust is used to load test web apps
  - Open-source load testing tool
  - Define user behavior in Python code
  - Swarm application with up to millions of users
- Integrate in to an AWS Elastic Beanstalk application
  - Easily deployed into AWS
  - Results are aggregated across multiple nodes

LOCUST

Let’s build!

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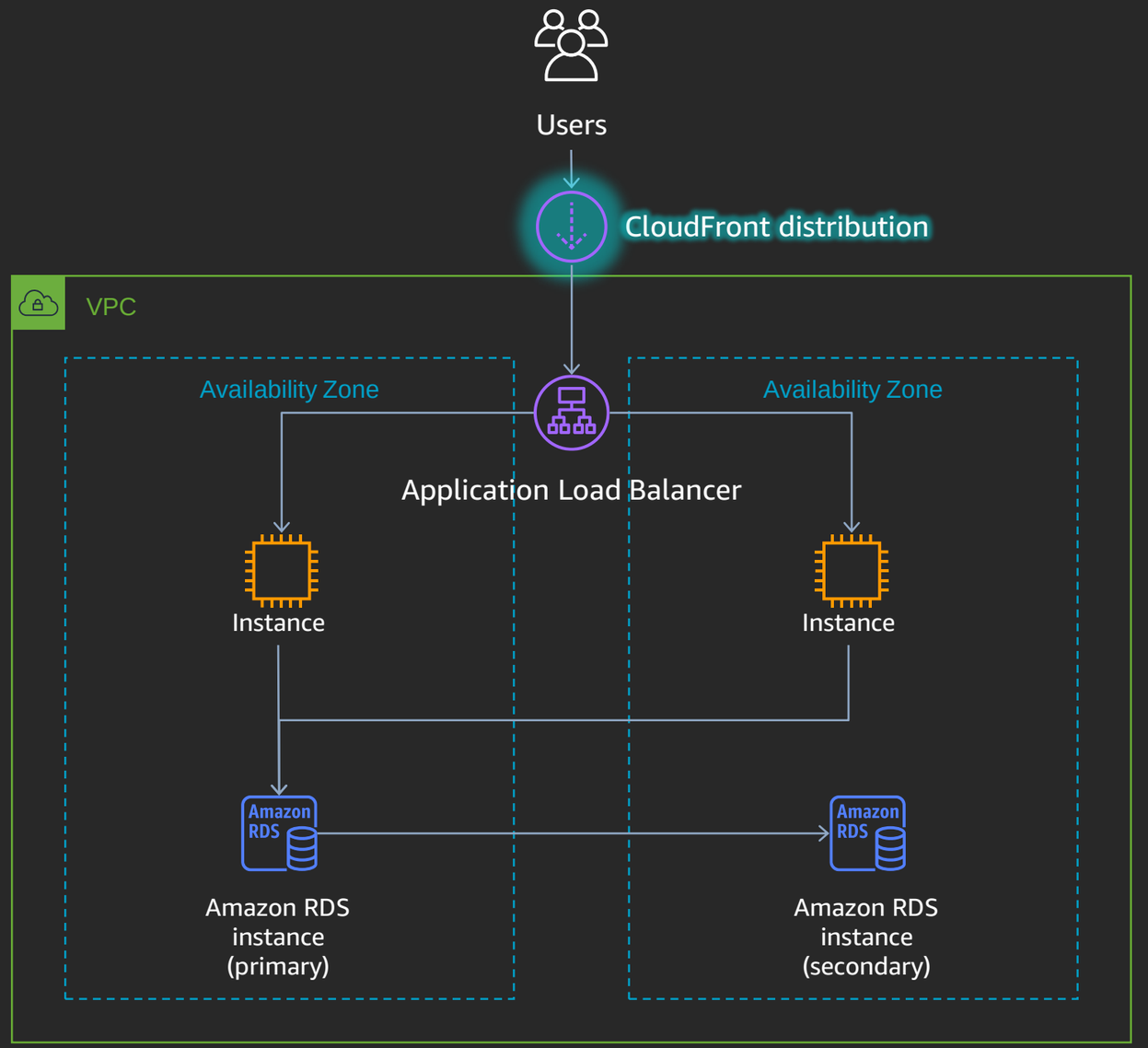
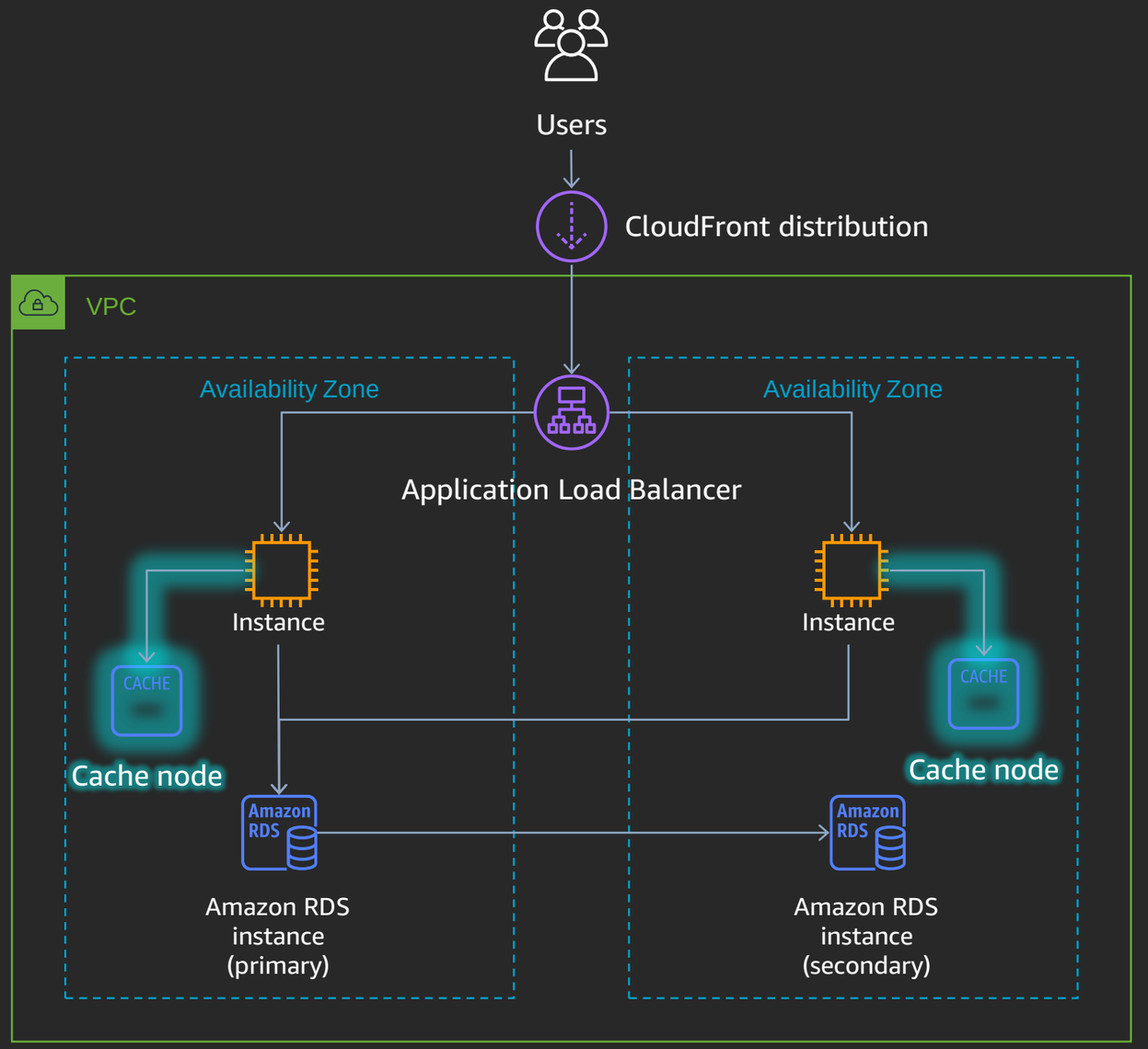
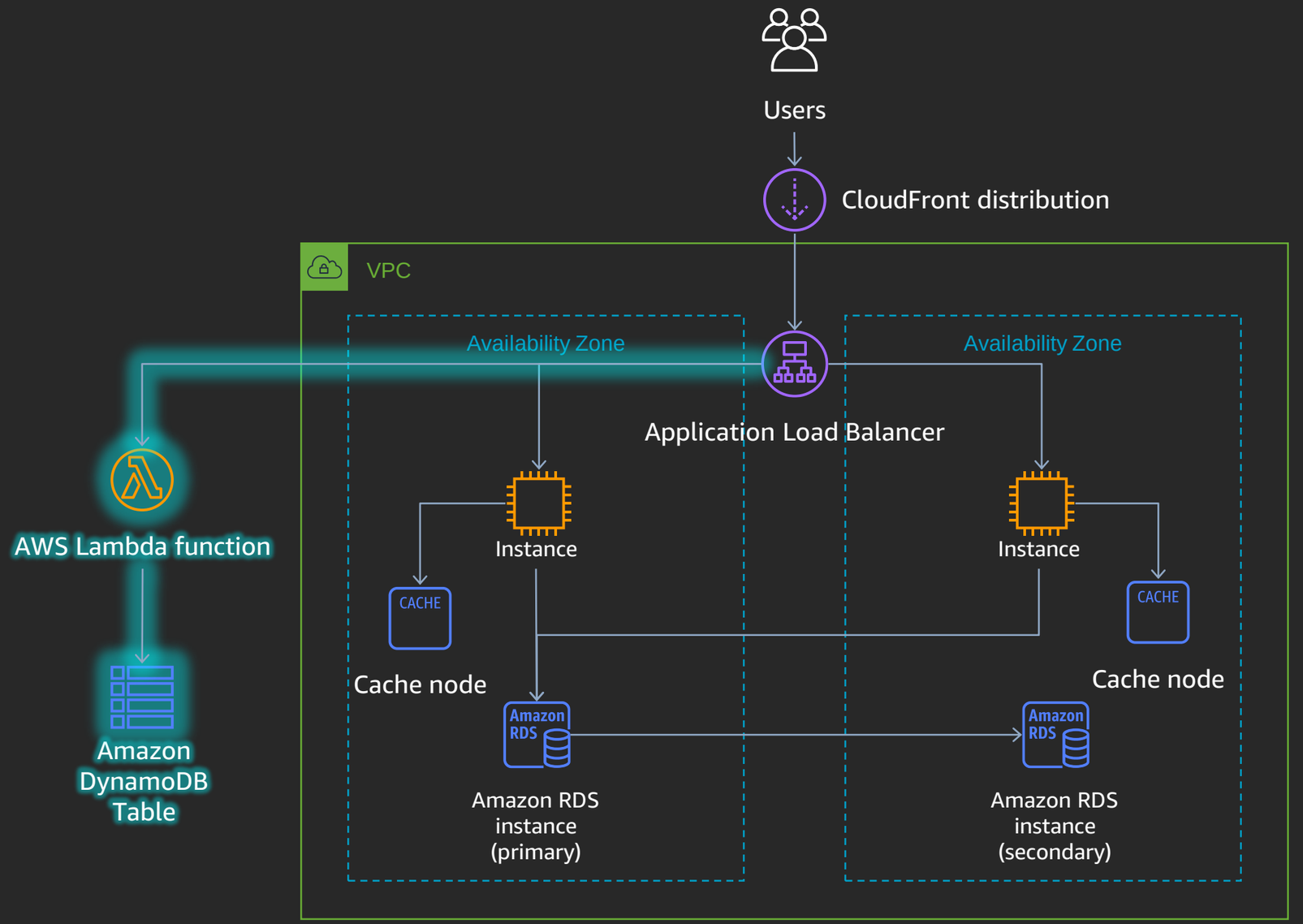
Stage 1: Amazon CloudFront



Stage 2: Amazon ElastiCache



Stage 3: Serverless API



Statistics summary

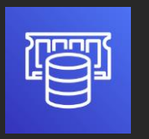
Scenario	Users, n	RPS	Response time, ms (data endpoint)	Response time, ms (all others)	Failures, %
Starting app	50	4	7141	10	0
Starting app	500	12	32000	12	40
CloudFront	500	43	3500	25	0
CloudFront	5000	420	5000	25	0
ElastiCache	5000	500	100	25	0
ElastiCache	10000	1000	200	40	0
Serverless API	10000	1000	30	30	0
Serverless API	20000	2000	30	30	0

These results are samples only and are based on test runs done against the solution in this session

Summary

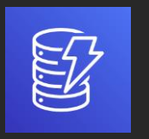
- AWS services can help scale your infrastructure
- Changes in code can be minimal or complex
- Scaling to tens of millions of users and beyond is possible

Amazon CloudFront



Amazon ElastiCache

AWS Lambda



Amazon DynamoDB

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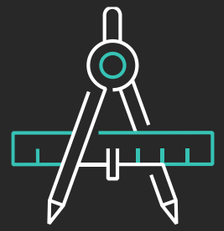

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aws training and certification

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