
AWS
re:Invent

SVS305

Building revolutionary serverless applications

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AWS

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My goal today for you

Understand why going serverless creates an advantage for you as a builder

Learn about tenets behind the AWS Lambda roadmap

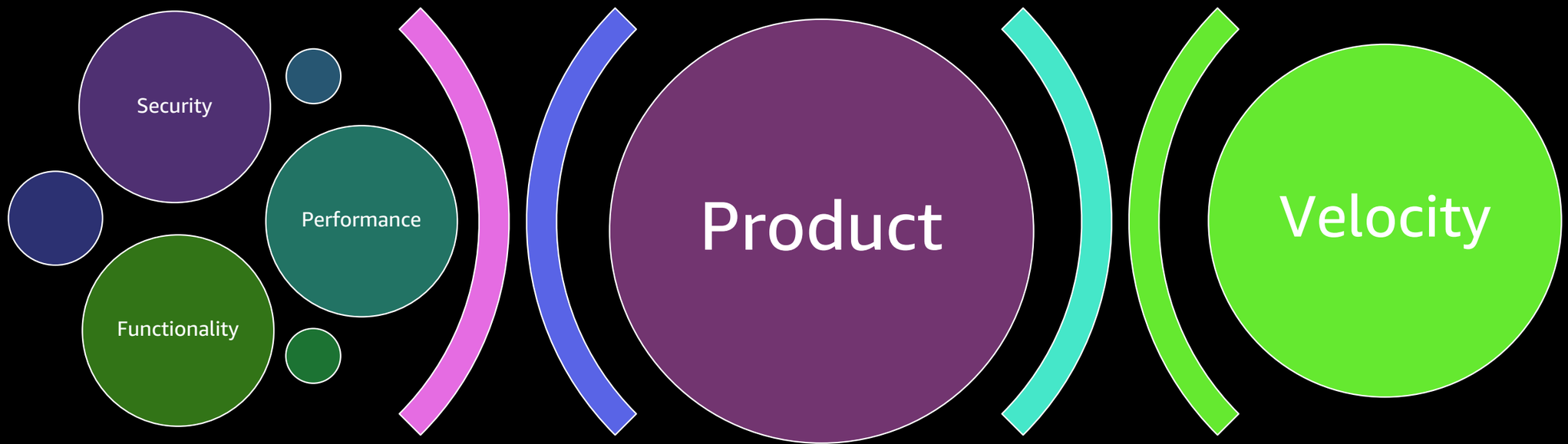
Learn about new workload classes are unlocked with recent launches

Learn about Lambda container image support and Lambda Extensions



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What a builder does



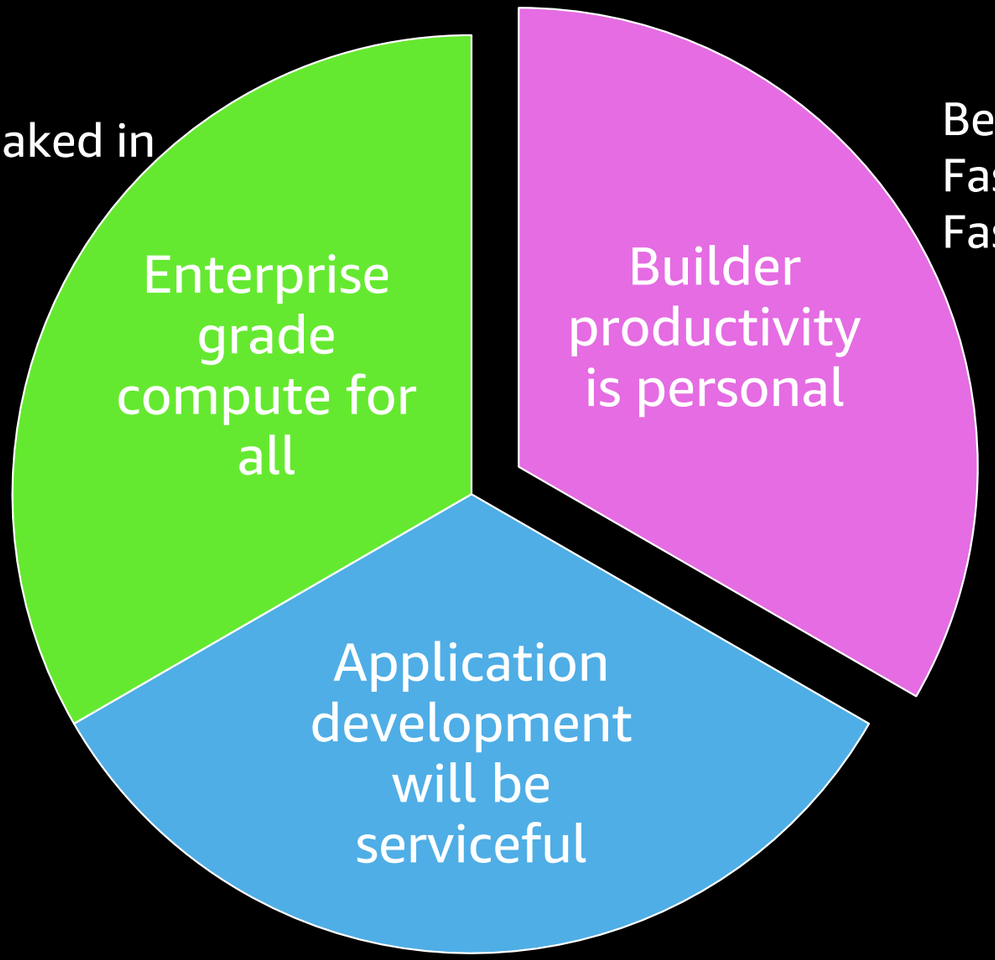
Scale

Cost

Context

Our tenets in serving builders

Security and performance are baked in
Expanding capabilities
Cost-effective at scale



Best practices are baked in
Faster delivery
Faster iteration

Faster iteration
Reliable scale
Consistent performance

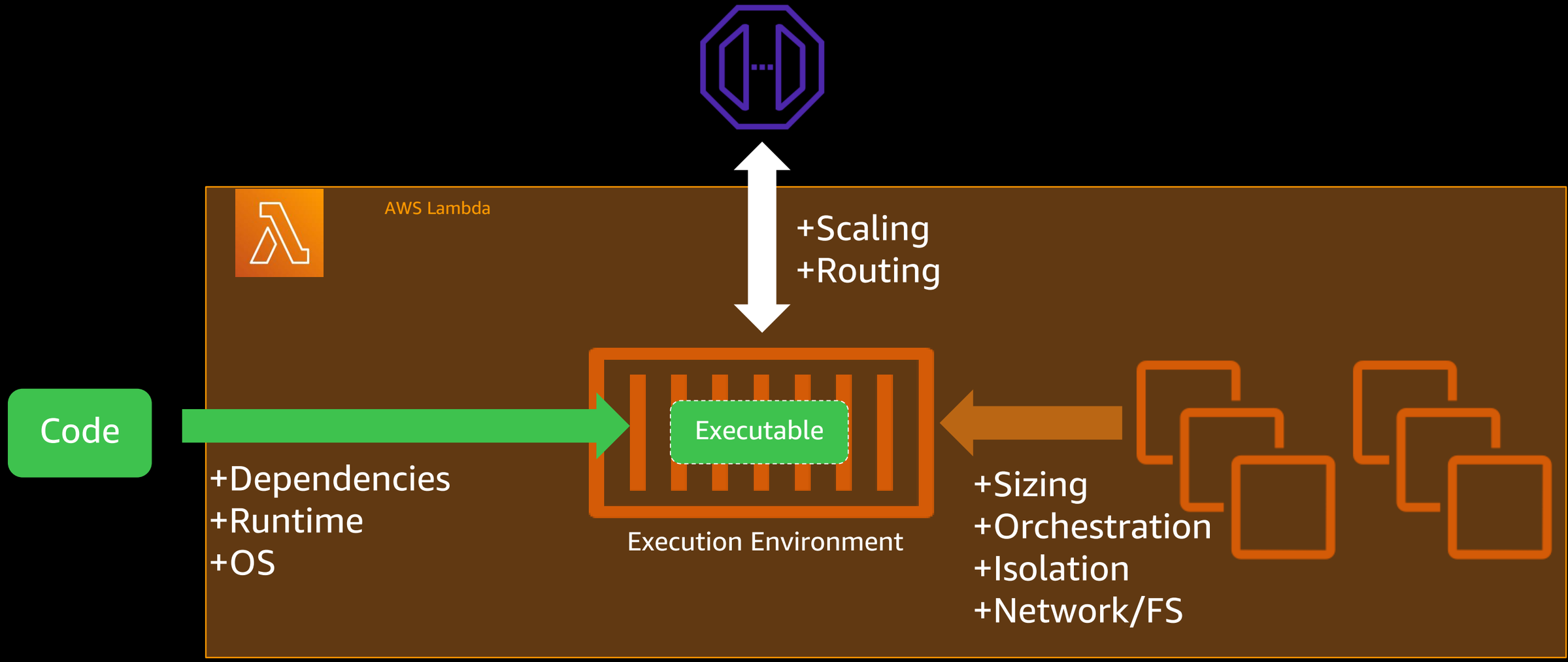
Compute for all



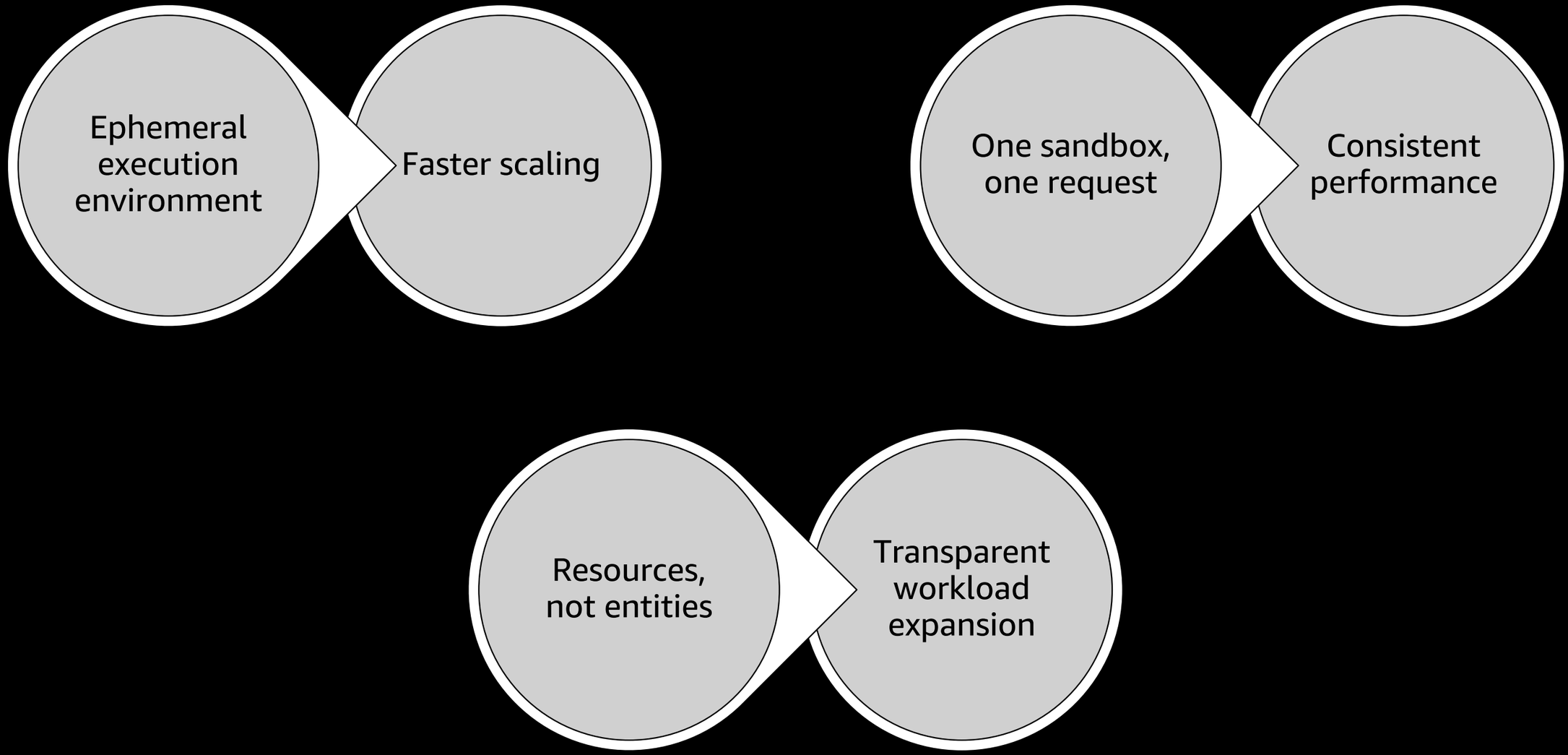
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How builders run code today

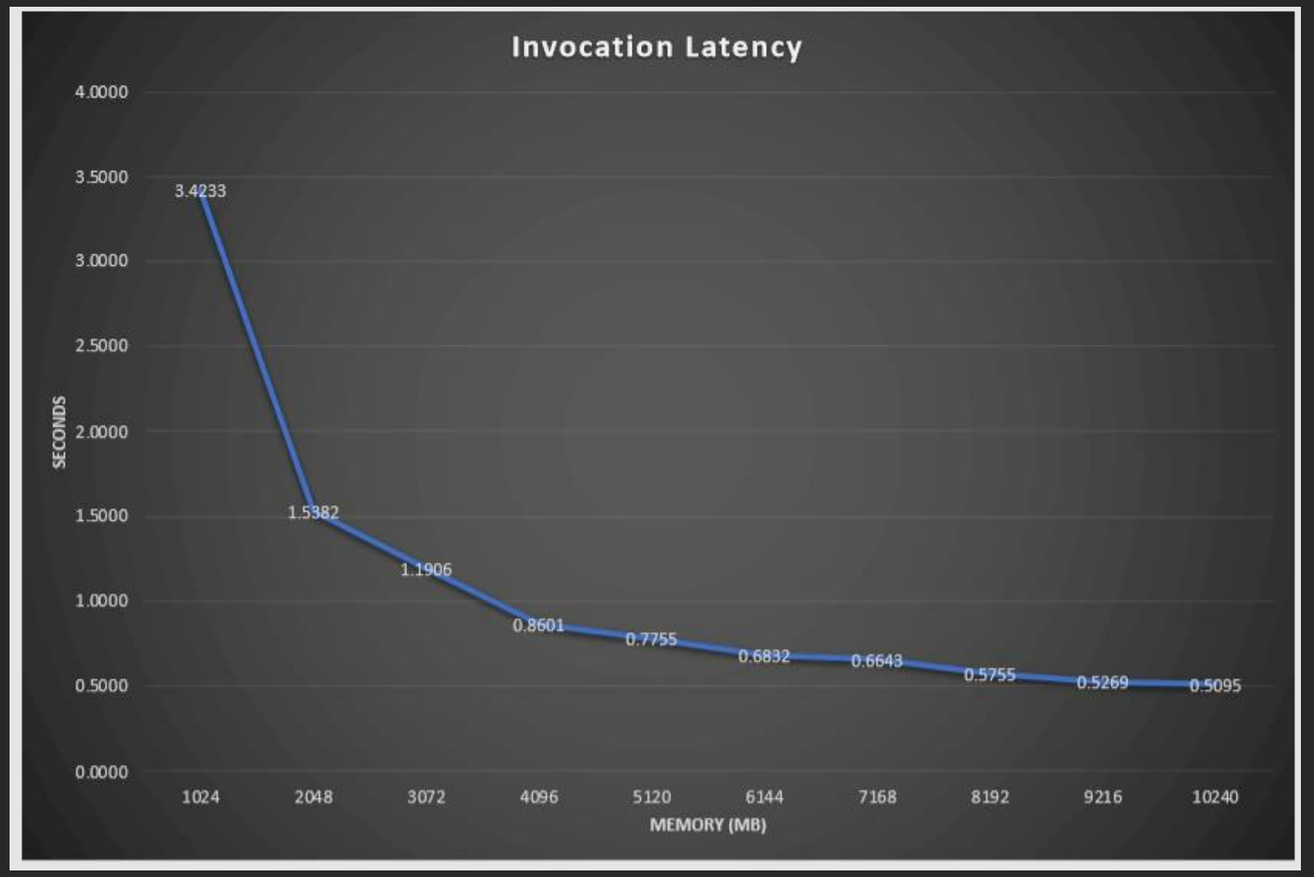


Design philosophy - Execution environment



Recent upgrades

- Hyperlink-powered VPC connectivity
- Unbounded, pay-per-use file storage with Amazon EFS
- Run libraries with AVX2 – 40% better performance
- 10 GB/6 cores per execution (up from 3 GB/2 cores)
- 1 ms billing granularity (down from 100 ms)



Performance for image classification using Pytorch with 10 GB

Why “compute for all” matters

- ✓ Compression algorithm for the experience AWS has in running compute at scale
- ✓ Economics get better without any effort on your part
- ✓ Security foundations come baked in no matter what you are building
- ✓ Powerful compute for any application with just an API call

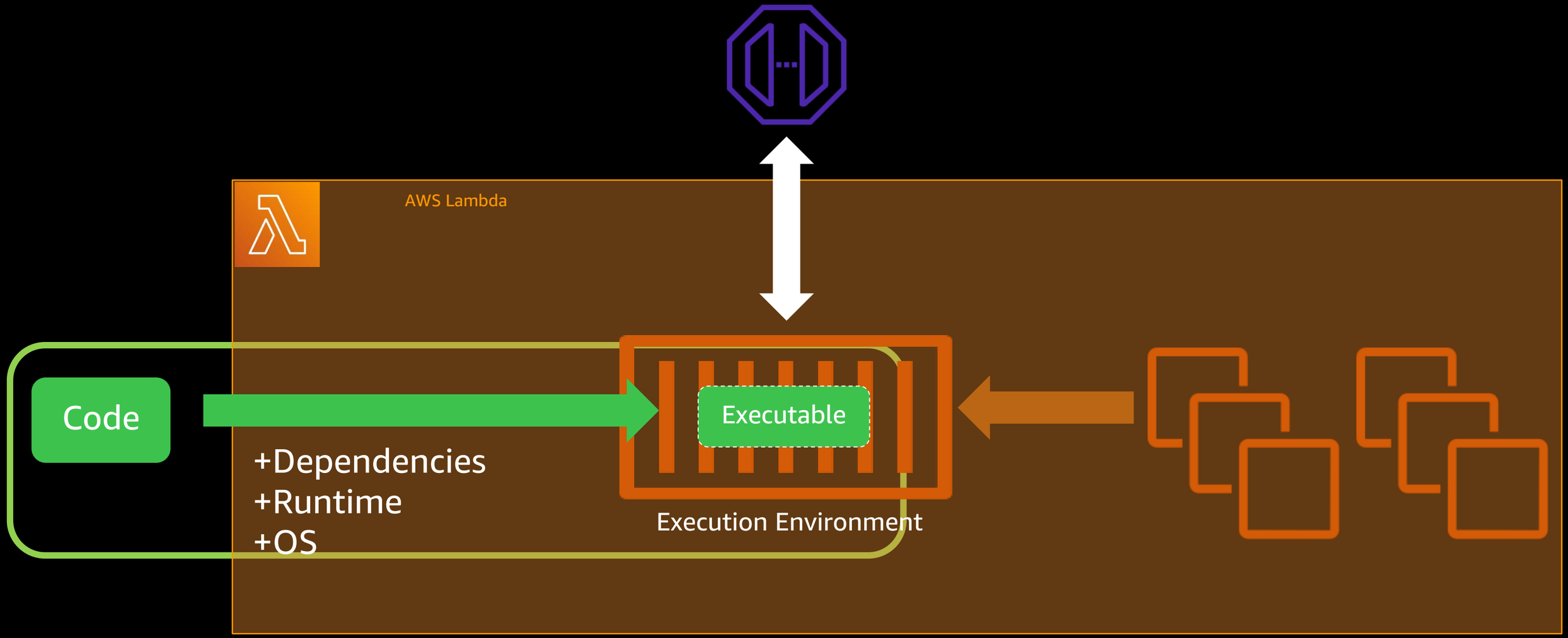
Personal productivity



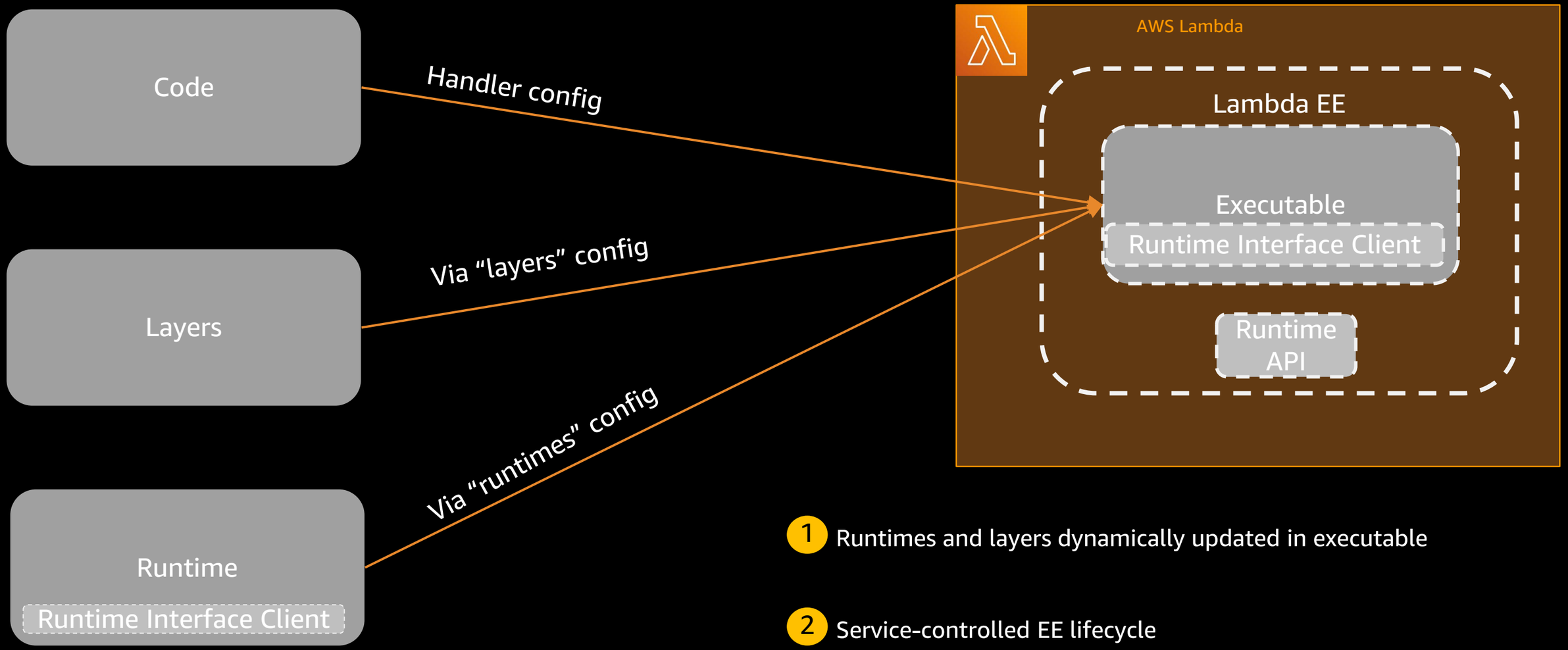
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Back to the compute stack



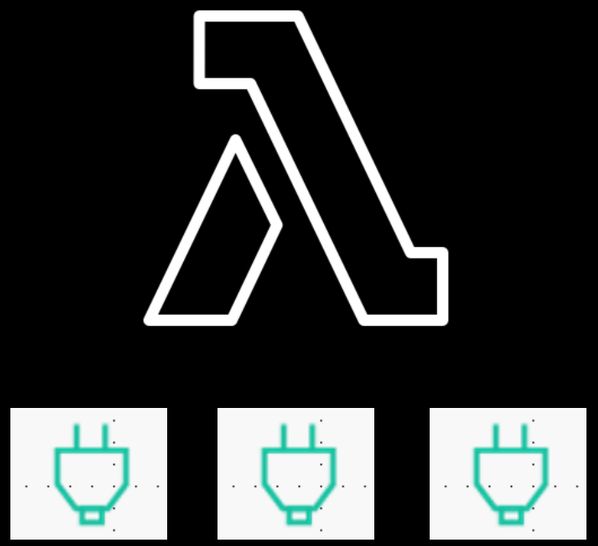
Under the covers



1. Runtimes and layers dynamically updated in executable

2. Service-controlled EE lifecycle

New – Extensions (Preview)



Easier integration of operational tools you already use

New! Extensions API for lifecycle events allowing pre-, parallel-, and post-execution actions

New! Logs API provides a way to access function and platform logs from within an extension

Enables new ecosystem of partners to augment Lambda operations

Extensions available today

AWS PARTNERS AND AWS TOOLS USING LAMBDA EXTENSIONS

























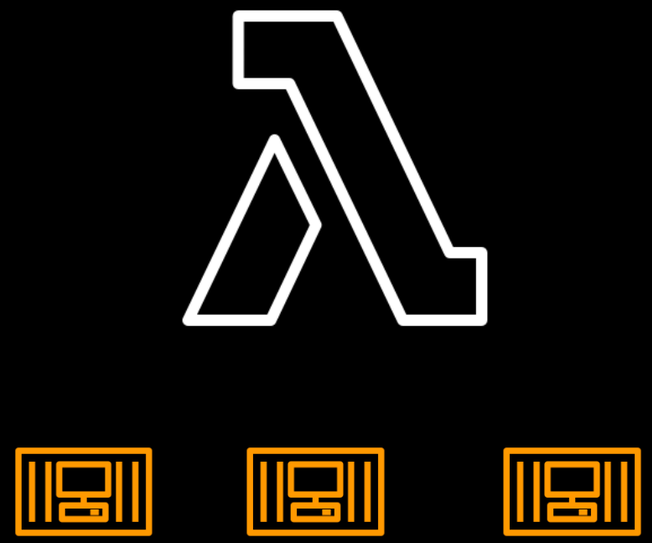








New - AWS Lambda container image support



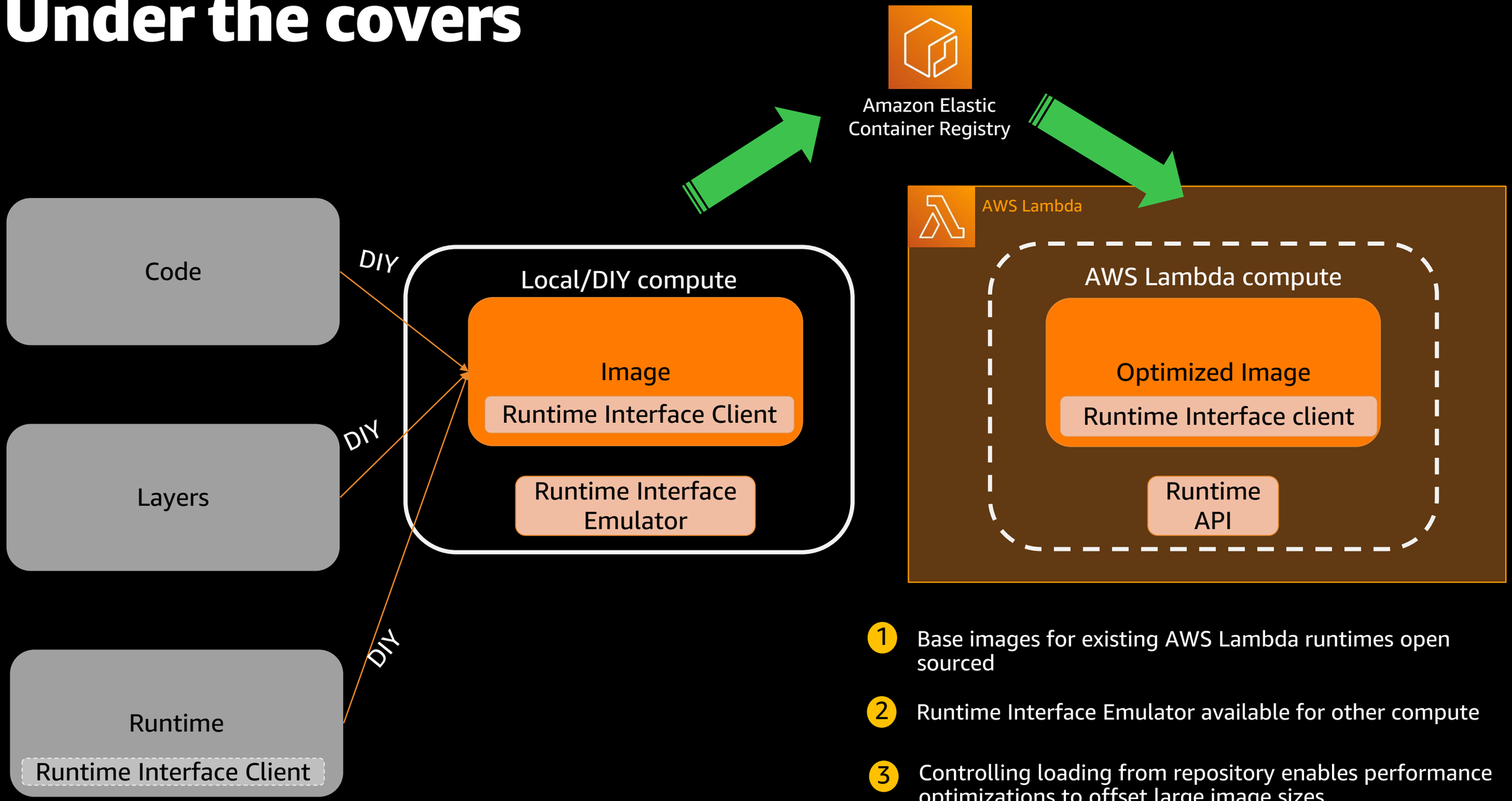
Use a consistent set of tools for containers and Lambda-based applications

Deploy large applications with AWS provided or third-party images of up to 10 GB

Benefit from sub-second autoscaling, high availability, 140 native service integrations, pay-for-use

Run custom container images on Lambda (with Lambda Runtime Interface Client) and run Lambda containers anywhere (with Lambda runtime Interface Emulator)

Under the covers



1. Base images for existing AWS Lambda runtimes open sourced
2. Runtime Interface Emulator available for other compute
3. Controlling loading from repository enables performance optimizations to offset large image sizes

Why making productivity personal matters

- ✓ Development velocity is heavily influenced by tooling preference
- ✓ Decoupling how code is written from how it runs expands applicability
- ✓ Expanding the ecosystem expands the shared capabilities “for all”

Serviceful development



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Application primitives as a service

APPLICATION PRIMITIVES – COMPUTE AND DATASTORES


Amazon S3


AWS Lambda


AWS Fargate


Amazon DynamoDB


Amazon Aurora Serverless


Amazon Kinesis

APPLICATION INTEGRATION


Amazon SNS


Amazon API Gateway


AWS Step Functions


Amazon EventBridge


Amazon MQ


Amazon SQS

DEVELOPER TOOLS


AWS CloudFormation


AWS Cloud9


AWS CodePipeline


AWS Config


AWS CloudTrail


Amazon CloudWatch


AWS X-Ray

SECURITY AND ADMINISTRATION


IAM


AWS SSO


Amazon GuardDuty


Amazon Inspector


Amazon VPC

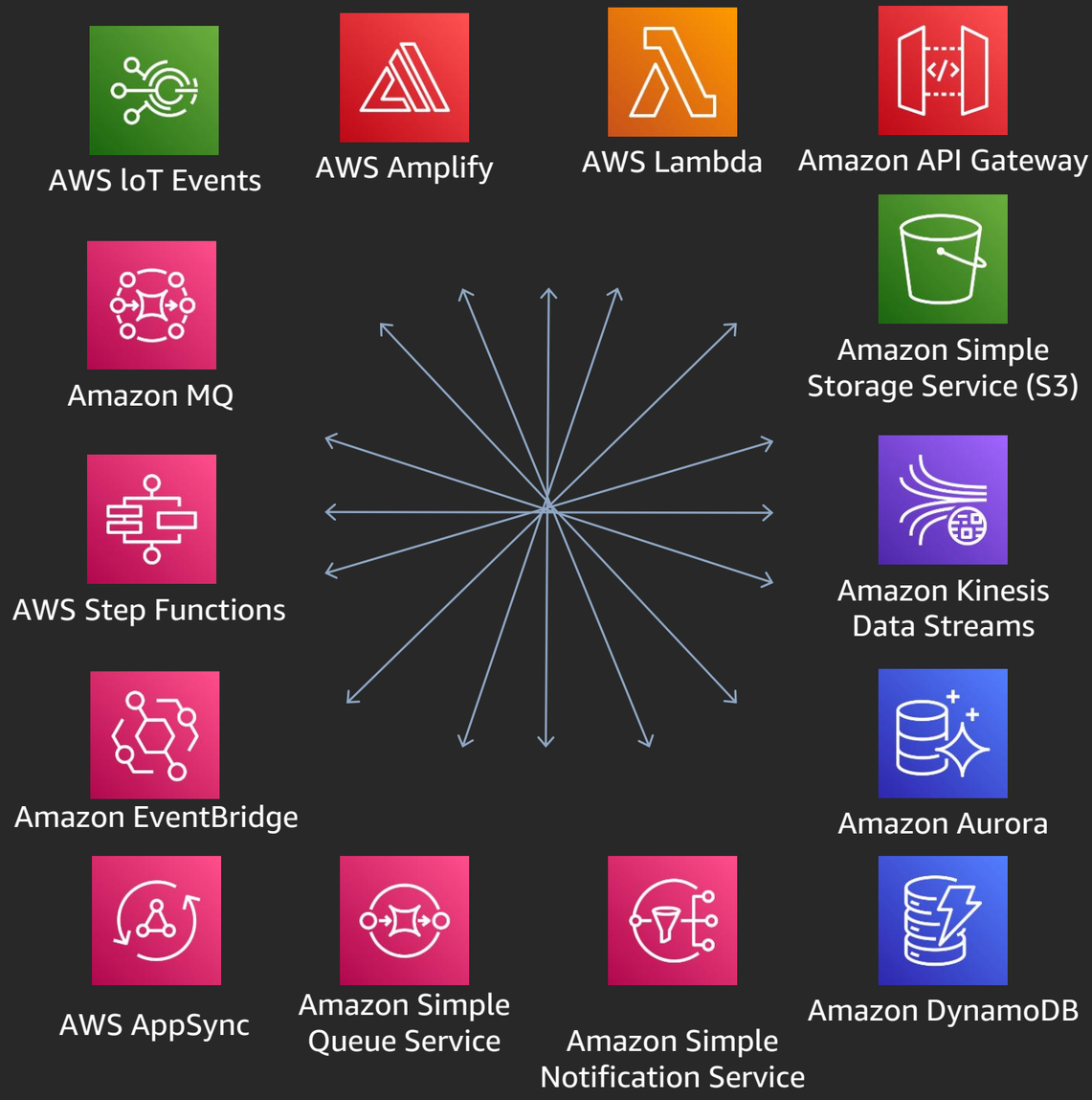

AWS WAF


AWS Shield


Amazon Cognito

Cross-service connectivity is hard

- ✓ Permissions (access, network)
- ✓ Addressability (one-to-one, many-to-many)
- ✓ Connectivity (sync, async)
- ✓ Reliability (retries, dead-letter queues, replays)
- ✓ Payload shaping (batching, concurrency)



Recent upgrades

- ✓ Use AWS Lambda functions to react to Amazon MQ and Amazon Managed Streaming for Kafka events
- ✓ Use AWS Step Functions to orchestrate Amazon API Gateway endpoints
- ✓ Amazon EventBridge event **replay** for better reliability
- ✓ **Synchronous** workflows with AWS Step Functions
- ✓ **Batch** Amazon SQS messages to AWS Lambda (up to 5 mins/10K messages)



Why serviceful development matters

- ✓ Availability, scale, performance built into the service
- ✓ Every interaction is secured and audited
- ✓ Flexibility in evolving interaction models with events and APIs
- ✓ Not just AWS services as primitives - tap into the “API economy”

Why going serverless is revolutionary

30x

Faster development

60%

Lower TCO

TRILLIONS

Of invocations per month

Agility = innovation = results

“What took us just a few days to build using a serverless solution based on AWS Lambda would have taken us six months to build from scratch.”

- **Edmunds**

Massive cost savings

“...[Customers] will run their AWS Serverless Platform environments at a 60% lower cost over a five-year period than their legacy or alternative environments.”

- **IDC**

Availability, security, scale built in

“We have experienced near-zero downtime and near-zero performance degradation while serving 200-300 million IPO requests per month.”

- **Financial Engines**


INVISTA

iRobot

J.D. POWER

Johnson & Johnson

Kelley Blue Book
THE TRUSTED RESOURCE

LG

Liberty Mutual
INSURANCE


Magellan
HEALTH

move

NETFLIX

NortonLifeLock

NuData Security
mastercard

Pearson

PHILIPS

PROTECTWISE

QANTAS

DLT
Department of Labor and Training
RHODE ISLAND

salesforce

SCANIA

SCHOLASTIC

SIEMENS


STATIONX
THE CYBER SECURITY COMPANY

Sysco

Telefónica

The Washington Post

The
Weather
Company

ThermoFisher
SCIENTIFIC


TOYOTA

twilio

UNDER ARMOUR

United Way
Orange County United Way

UNIVISION

verizon

VIZIO

VOLKSWAGEN
GROUP

VOLVO
Volvo Group

VONAGE

WYNDHAM
HOTELS & RESORTS

Yum!

Thank you!

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