

The background features a vibrant, multi-colored gradient. The top left is a deep blue, transitioning through purple and magenta to a bright orange and yellow in the center, and finally fading into a light blue and white on the right. A diagonal line separates the darker blue/purple area on the left from the lighter orange/yellow area on the right.

AWS
re:Invent

SVS302

Build a serverless online game and real-time leaderboard

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Amazon Web Services

Let's play

<https://serverless.alienattack.ninja>

Use your computer (it does not work on mobile yet)

Register yourself

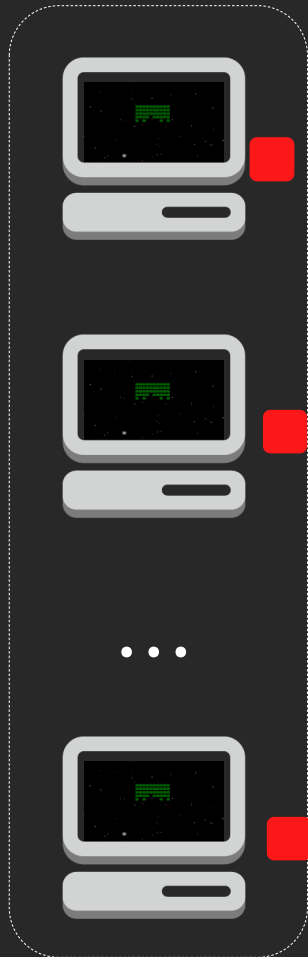
Let the sound on

Start playing

Important: If you restart, your score will reset

Why Alien Attack?

Producer-consumer pattern at scale



Gamers
(producers)



Manager
(consumer)

Related use cases

- Sales reporting
- Event reporting from beacons in intelligent retail stores
- Financial transactions reporting
- Event processing (mobile apps, IoT)
- Gamification scenarios (where a scoreboard can be handy)
- Monitoring patient status in hospitals
- Tracking of news or social media posts
- And more

Alien Attack game requirements

Security
(RBAC)

Real-time
processing



Long-term
storage

Minimize
infrastructure
TCO

Message processing vs stream processing

Message processing



- The individual **message is the unit of work**
- Computation/processing per message
- Message occurrence can vary
- **DLQ functionality built in**
- Messages are deleted after consumption
- **No need to track the position**

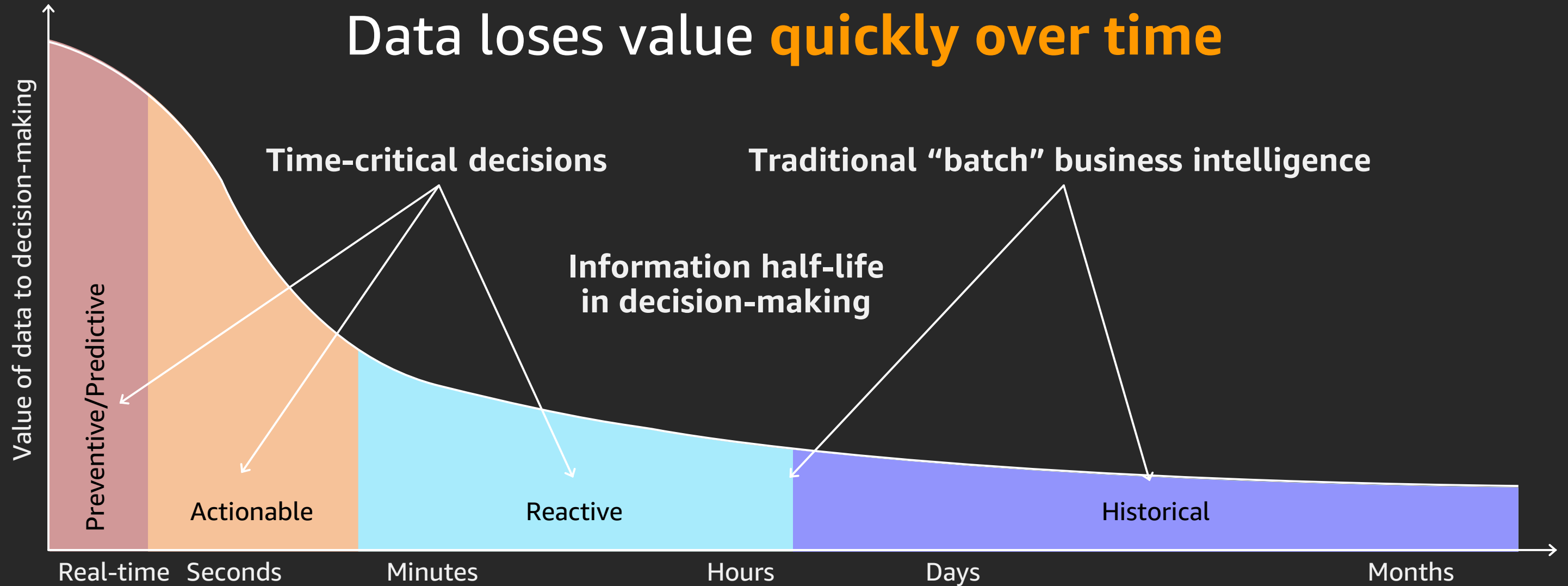
Stream processing



- The message **stream is the unit of work**
- Complex computation on many messages
- Constant stream of messages
- **No built-in DLQ functionality**
- Messages are available after consumption until expiration
- Each **client needs to track the current position** in the stream

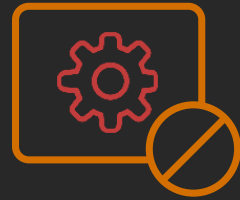
“Real-time” and “near-real-time”

Data loses value **quickly over time**



Source: Perishable insights, Mike Gualtieri, Forrester

Why serverless?

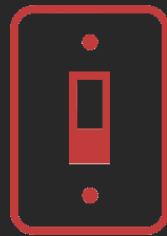


No infrastructure provisioning,
no management



Automatic scaling

Pay for value

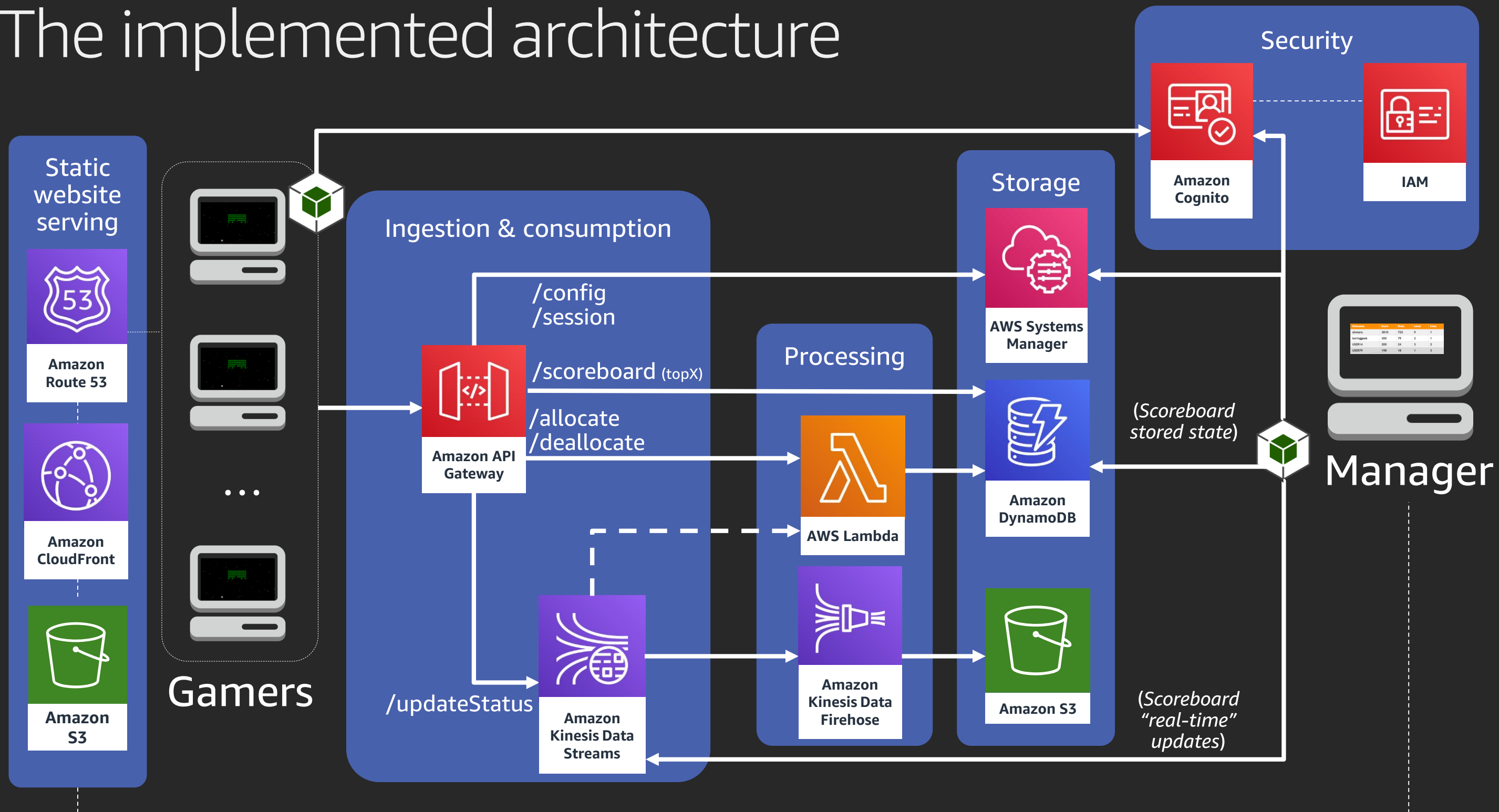


Highly available and secure

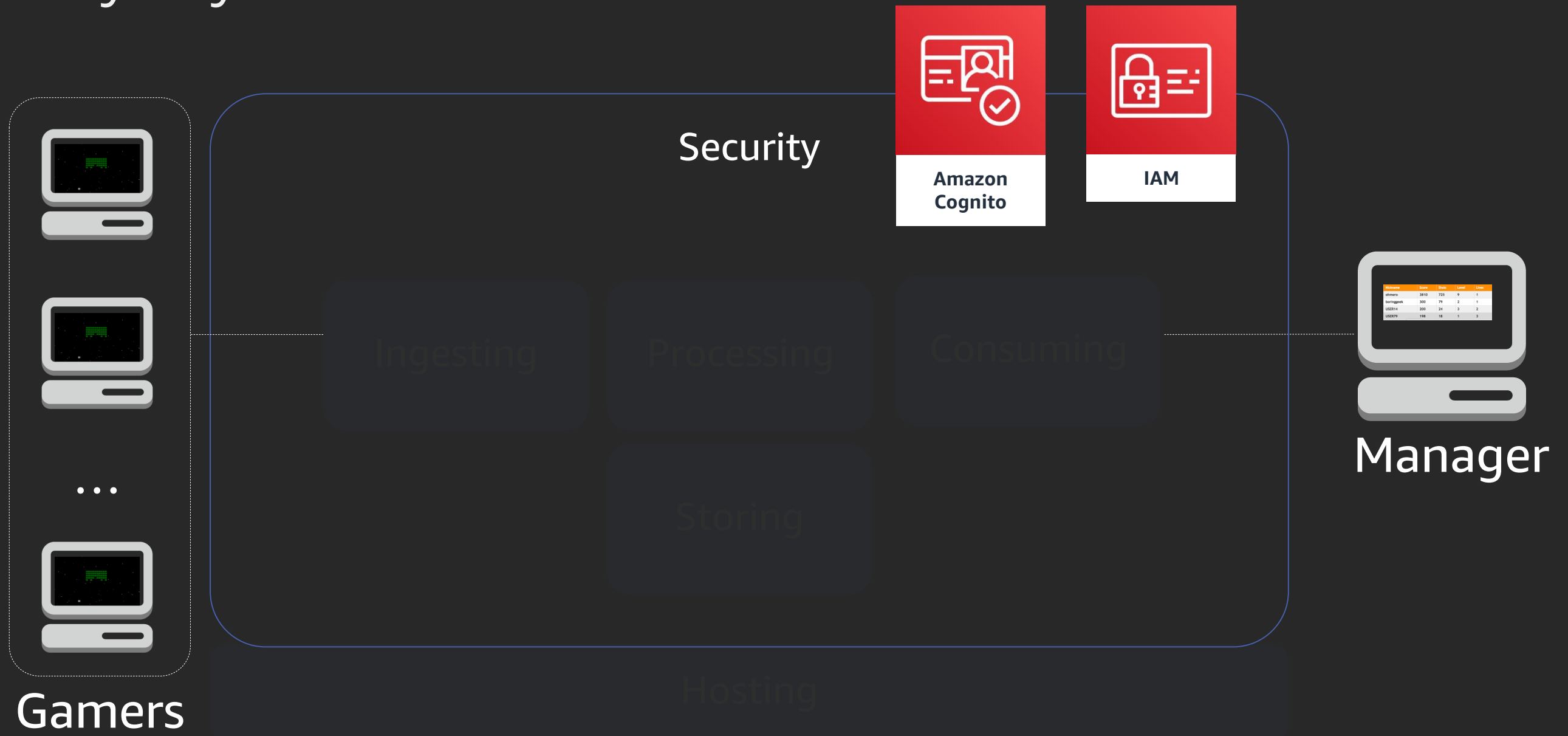


Architecture walkthrough: What we are going to build

The implemented architecture

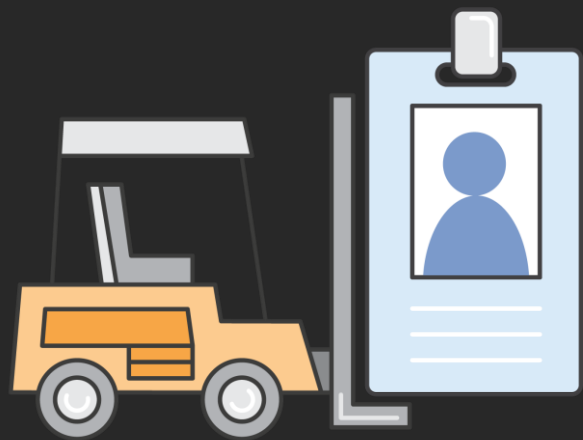


Security layer

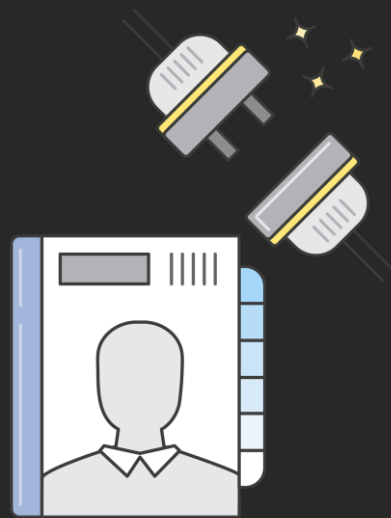


Amazon Cognito

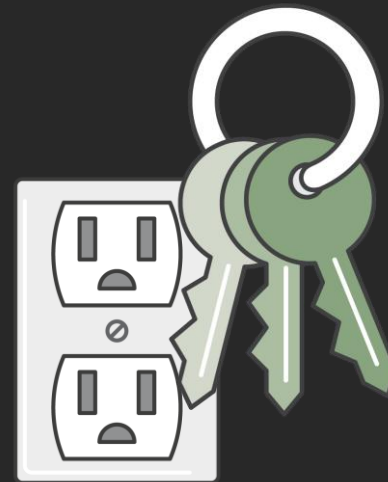
Simple and secure user sign-up, sign-in, and access control for web and mobile apps



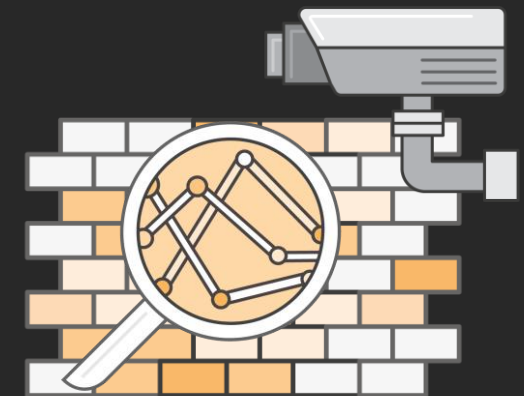
Offload undifferentiated identity heavy lifting



Use your choice of existing or cloud-native identities



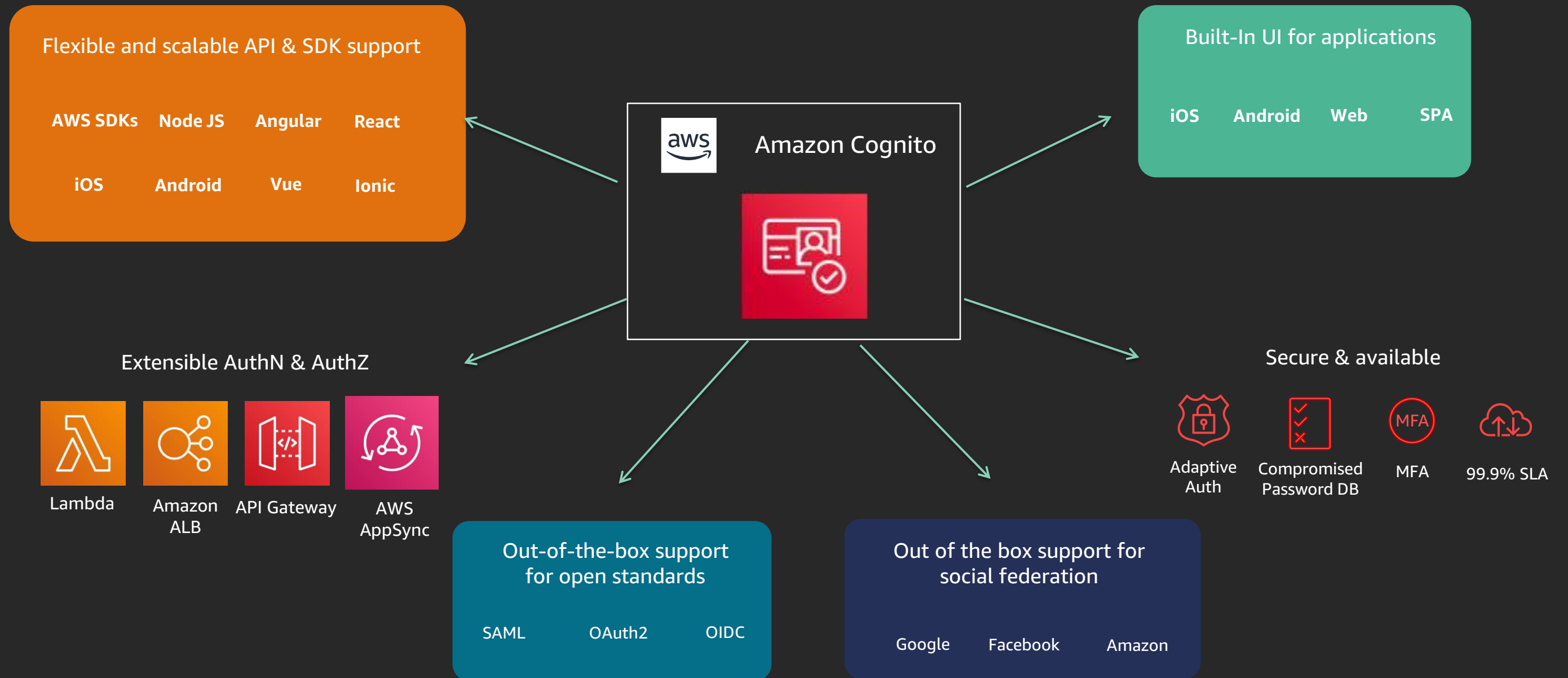
Use standards-based authentication



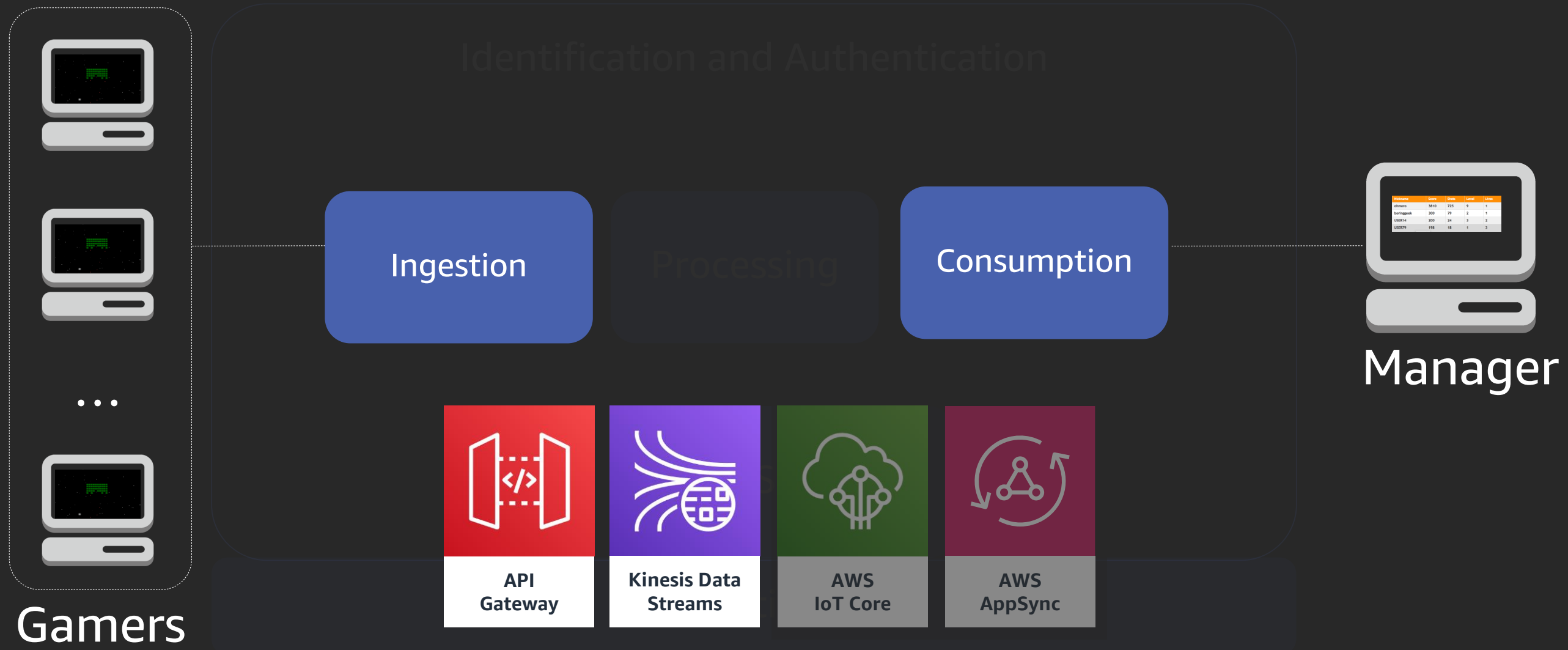
Provide advanced security for your apps and users

Amazon Cognito

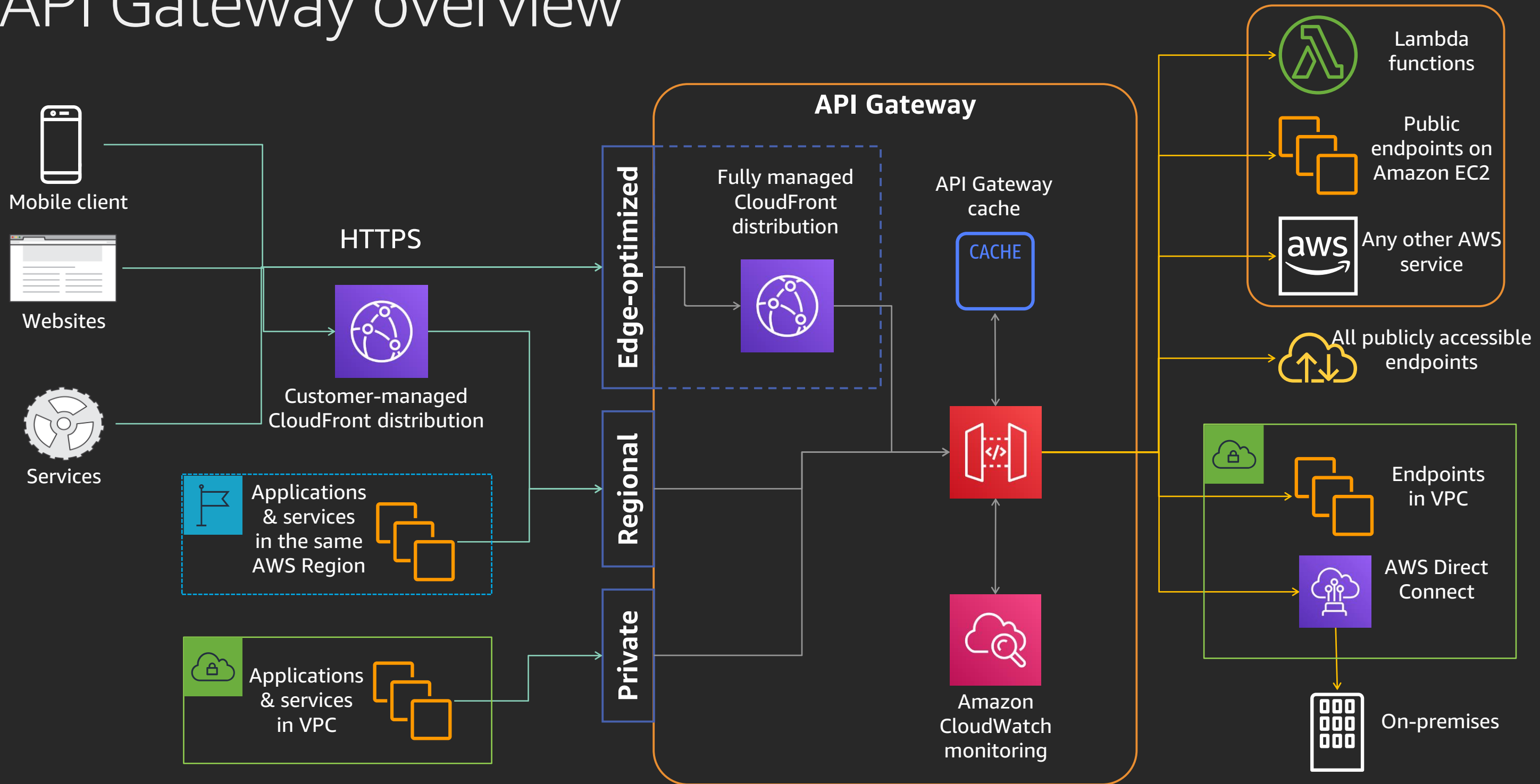
Flexible and fully managed application identity



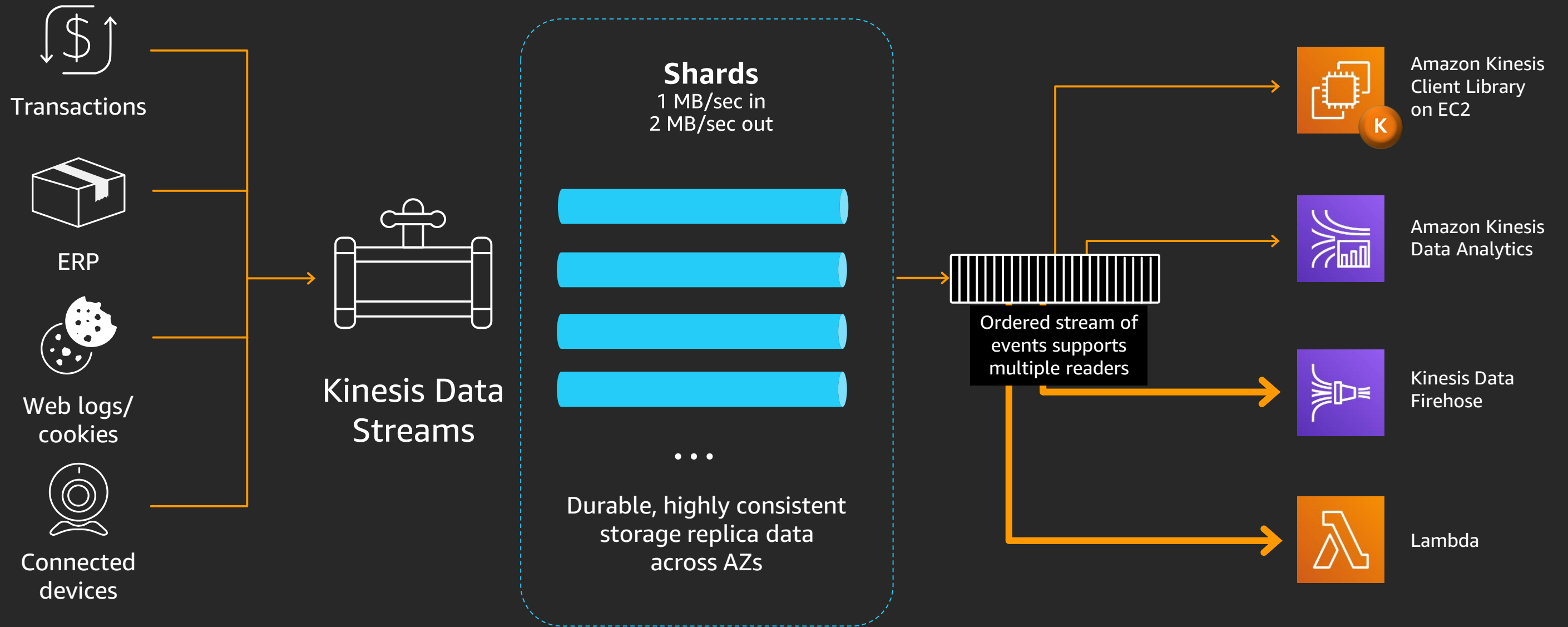
Ingestion/Consumption Layer



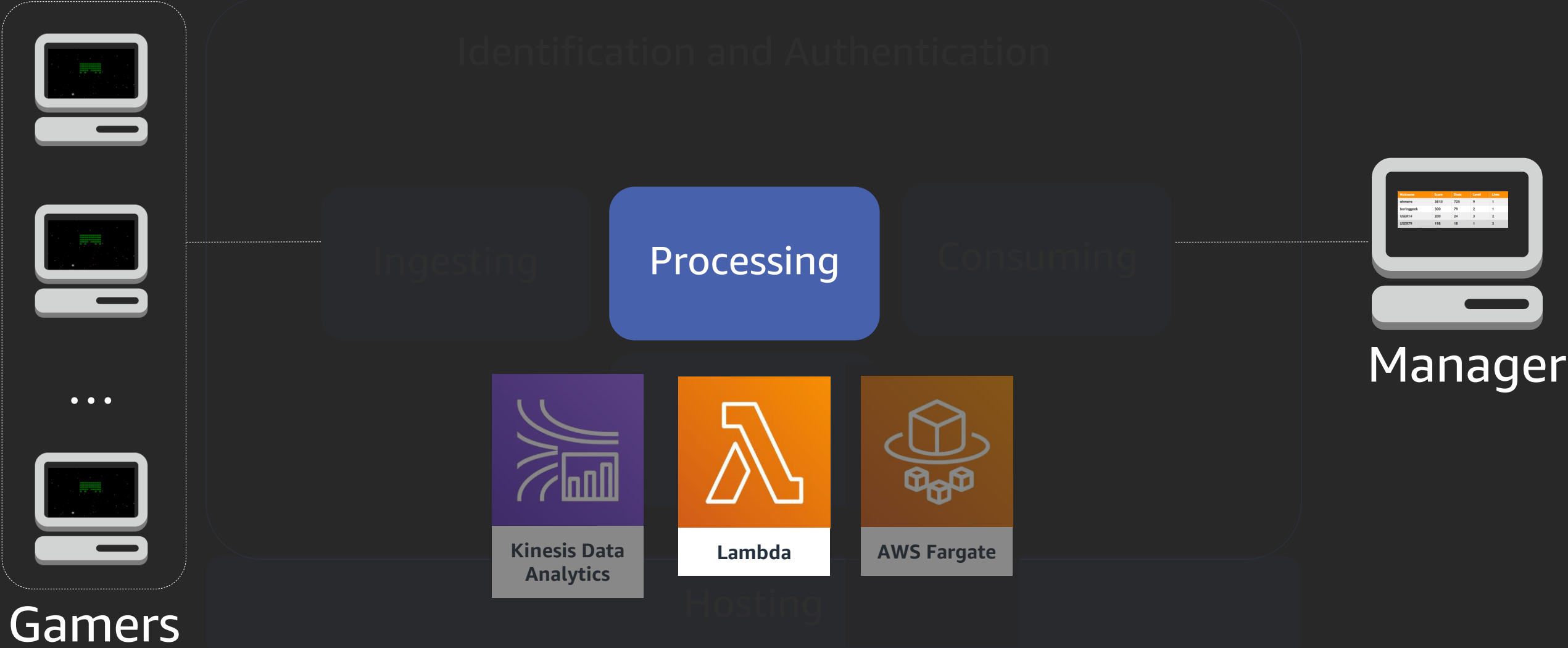
API Gateway overview



Kinesis Data Streams



Processing layer



Serverless applications

Event source



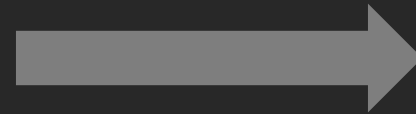
Changes in data state



Requests to endpoints



Changes in resource state



Function



Node.js
Python
Java
.NET Core
Go
Ruby
BYOL

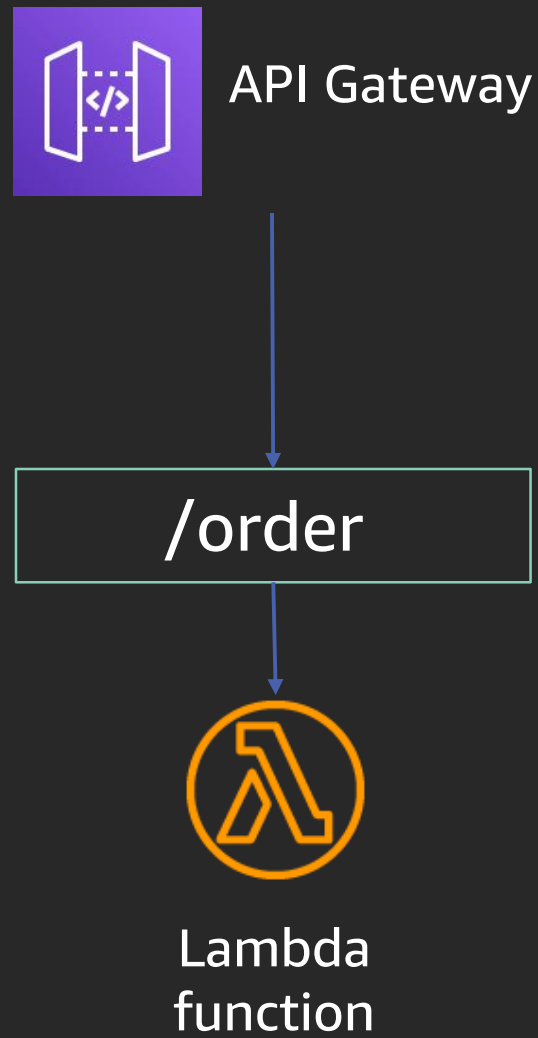


Services (anything)

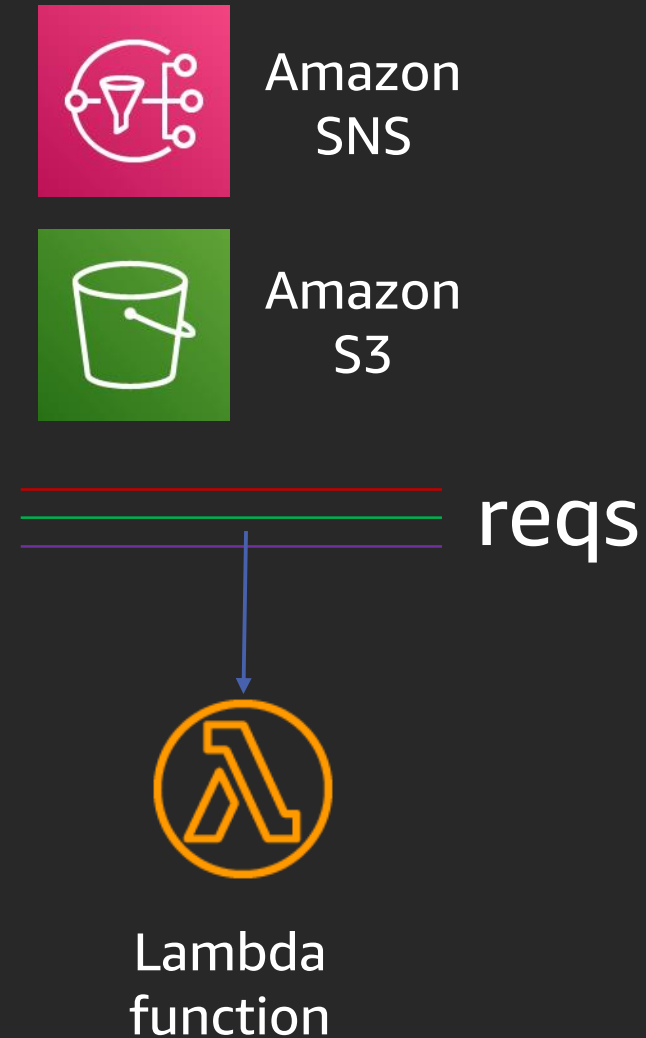


Lambda execution model

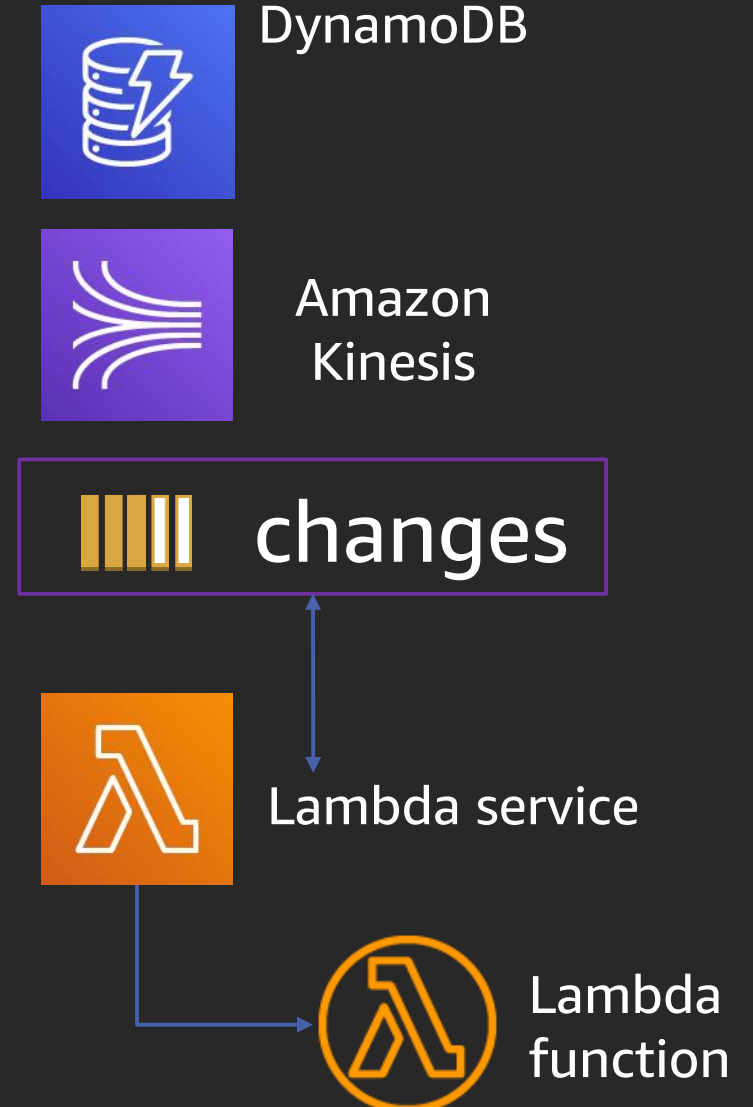
Synchronous (push)



Asynchronous (event)



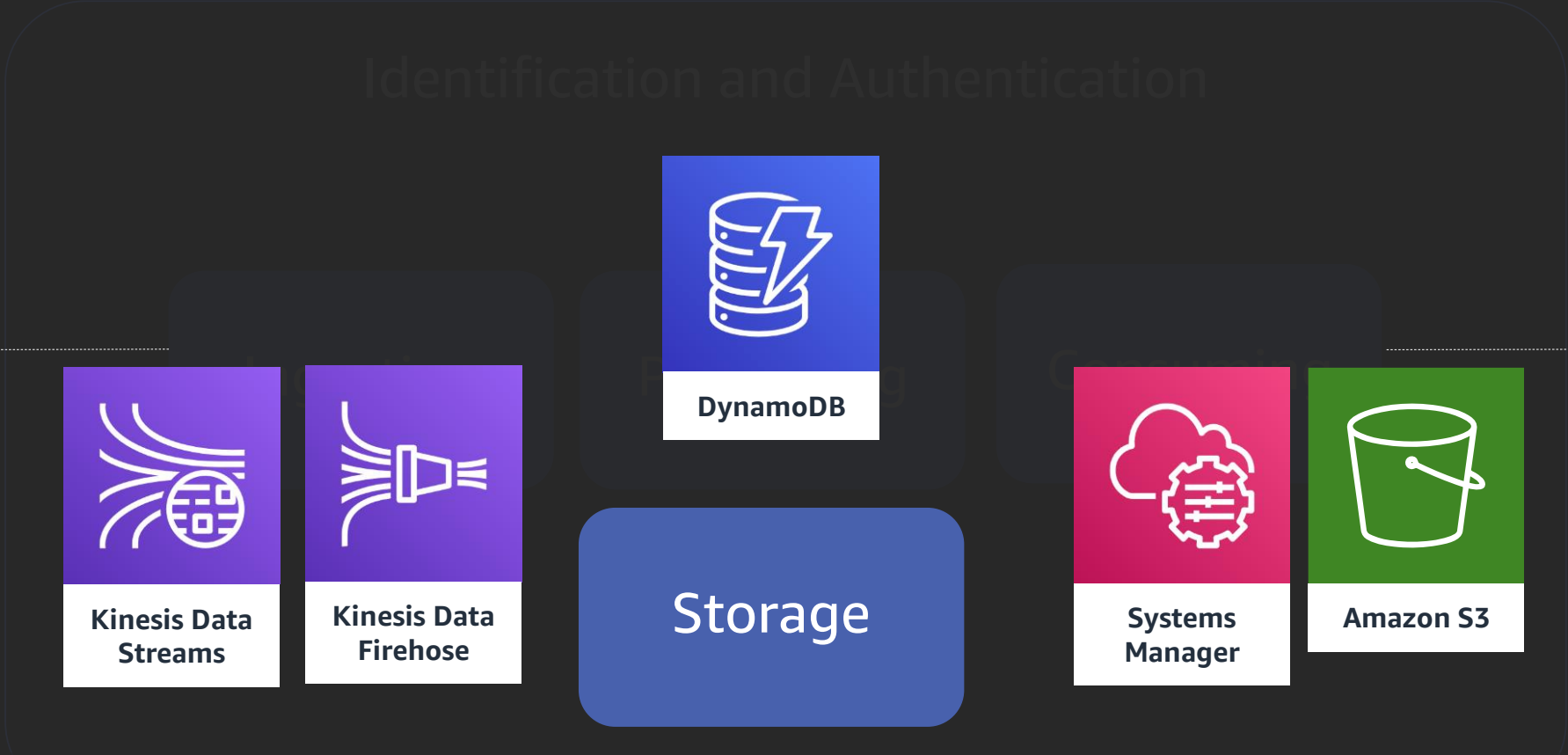
Poll-based



Storage layer



Gamers



Amazon RDS



Amazon ElastiCache



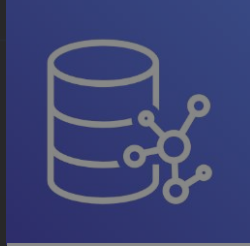
Amazon Aurora



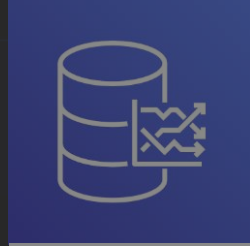
Amazon Redshift



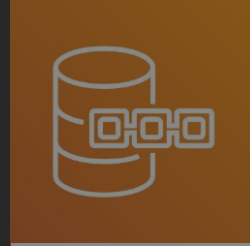
Amazon DocumentDB



Amazon Neptune



Amazon Timestream

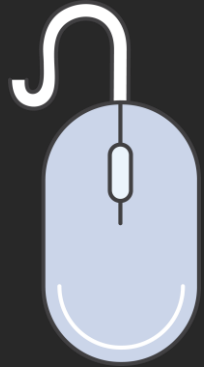


Amazon QLDB

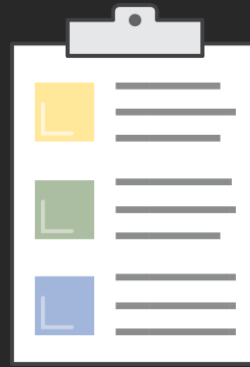


Manager

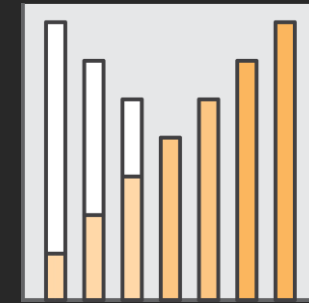
Amazon DynamoDB



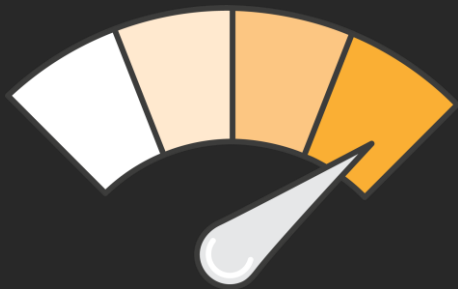
Fully managed NoSQL



Document or key-value



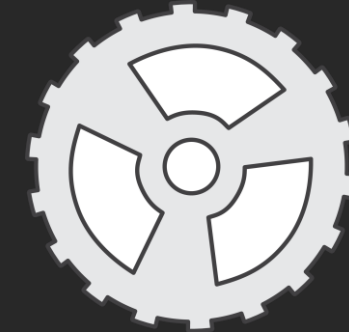
Scales to any workload



Fast and consistent

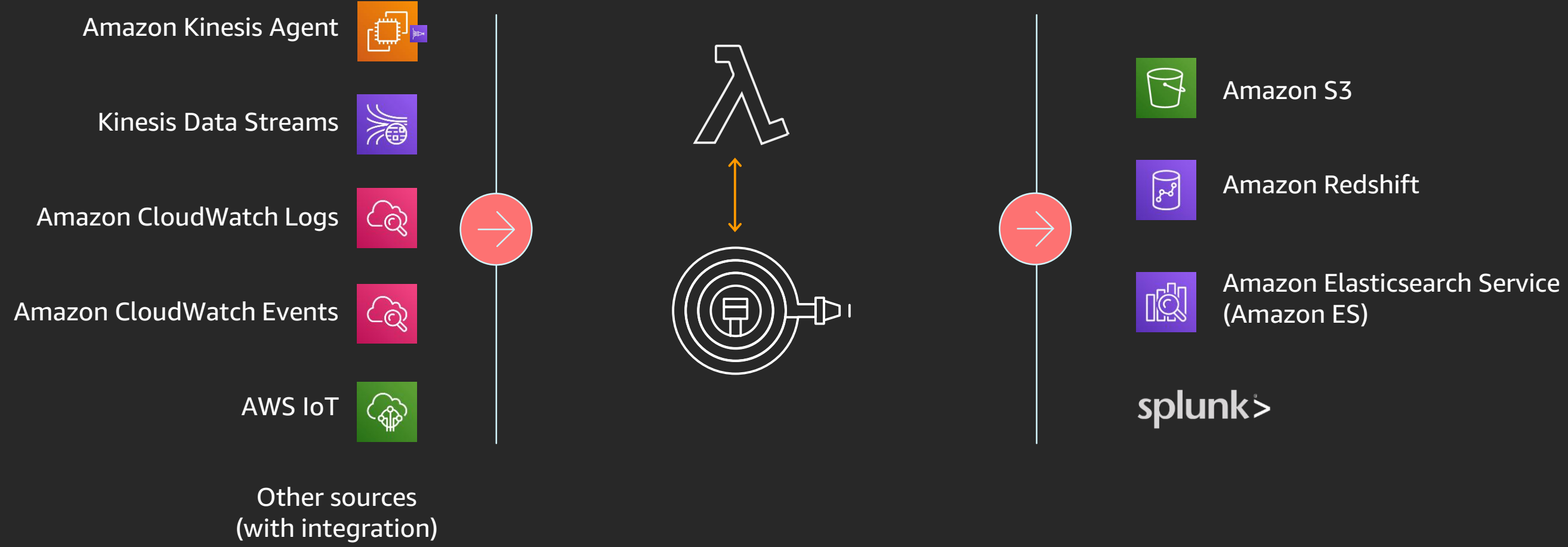


Access control



Event-driven programming

Kinesis Data Firehose



AWS Cloud9

Cloud-based integrated development environment



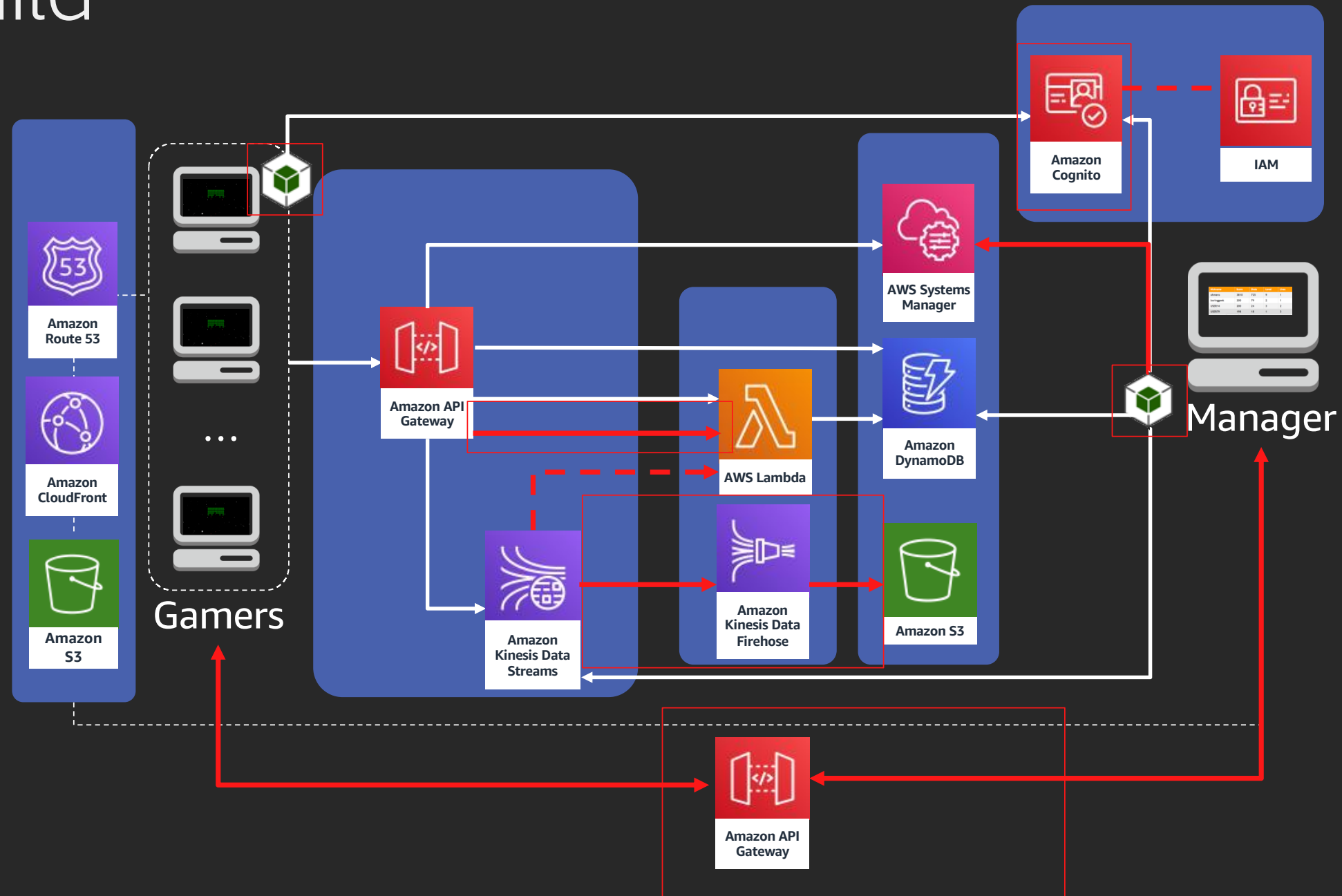
Code with just a web browser

Fully featured IDE

Build serverless applications

Collaborate in real time

#GoBuild

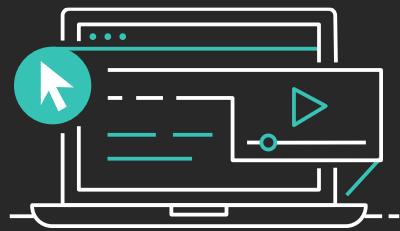


Your environment
<https://dashboard.eventengine.run>

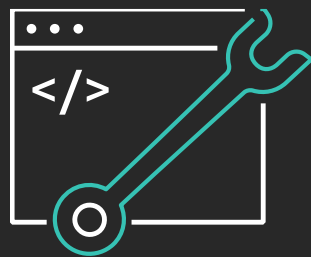
Workshop instructions
<https://alienattack.workshop.aws/>

Learn serverless with AWS Training and Certification

Resources created by the experts at AWS to help you learn modern application development



Free, on-demand courses on serverless, including
Deep Dive: Lambda@Edge and Deep Dive on AWS Fargate



Additional digital and classroom trainings cover modern
application development and computing

Visit the Learning Library at <https://aws.training>

Thank you!

Fabian Da Silva

fabisilv@amazon.com



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