Backend REST API

Architecture with AWS Component

Backend Architecture
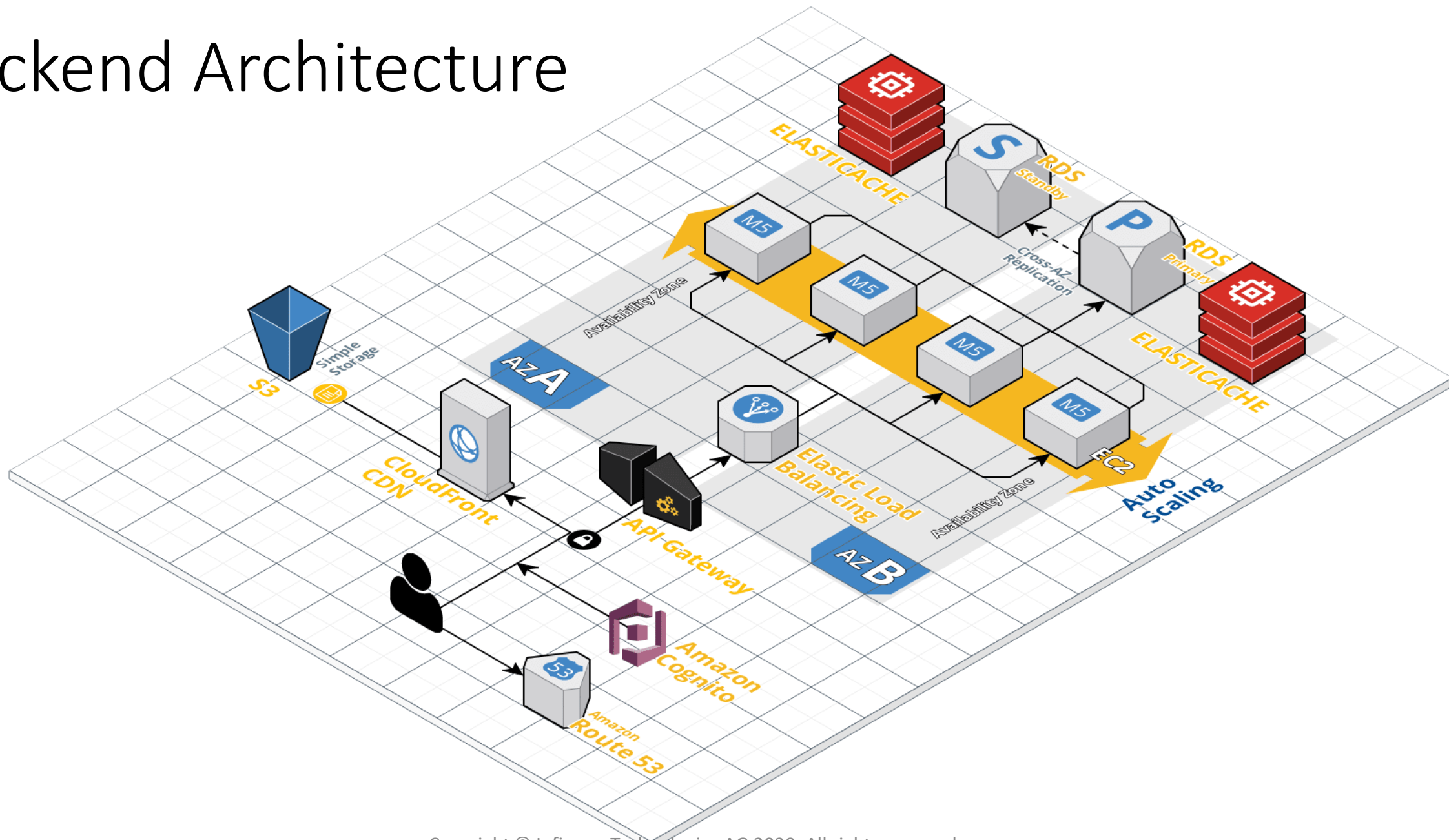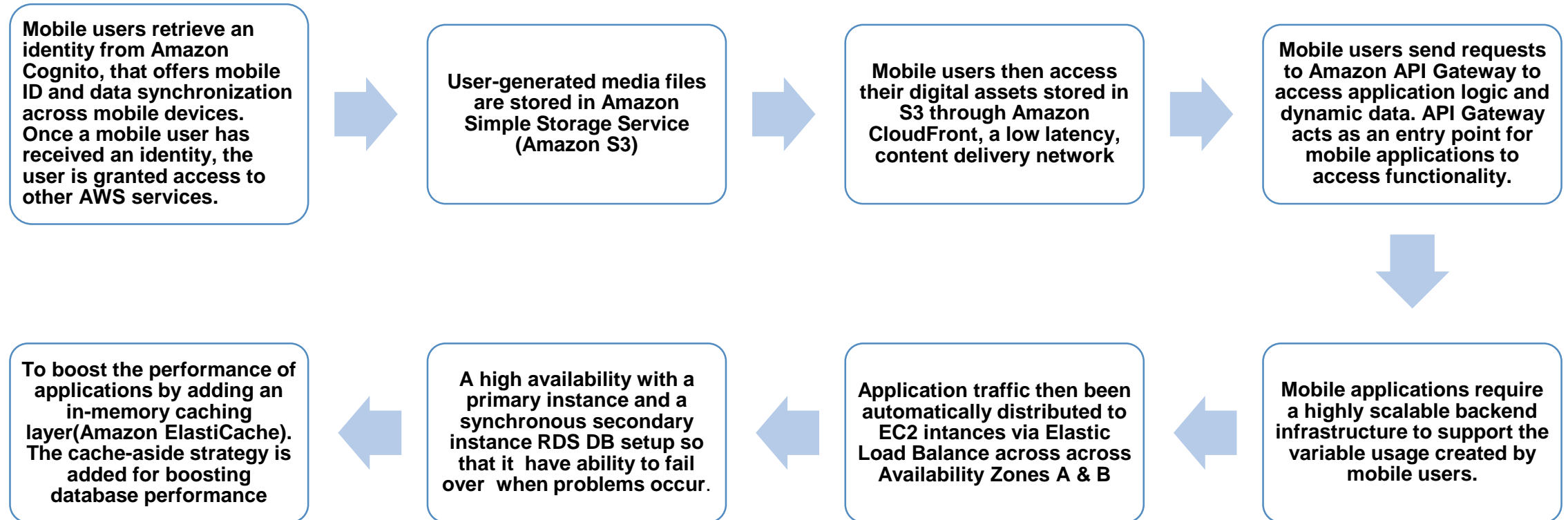
AWS Services

AWS Component	Details
AWS Cognito	Mobile apps have the basic need to do user sign-up and sign-in. Cognito allows login via user pools created through apps, it also works with an external identity provider that support SAML or OpenID Connect and social identity providers such as (Facebook, Twitter, Amazon).
Amazon S3	A Simple Storage Service to stores mobile application static assets including certain mobile user data such as profile images.
Amazon Cloud Front	Start-ups should consider delivering all static content via CloudFront. In a simplified world, the company can keep all its content in S3 buckets. CloudFront would read and cache content in various regions.
Amazon Route 53	A highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications.
API Gateway	A mobile application running on a user's smartphone and API Gateway Amazon API Gateway opens up a variety of presentation tier possibilities. An Internet-accessible HTTPS API can be consumed by any client capable of HTTPS communication.

AWS Services

AWS Component	Details
Elastic Load Balance	Automatically distributes incoming application traffic across multiple targets, such as Amazon EC2 instances. It can handle the varying load of your application traffic in a single Availability Zone or across multiple Availability Zones
EC2(M5 Large)	Setup in Multiple Available Zone to with highly scalable backend infrastructure to support the variable usage created by mobile users.
Amazon RDS	The basic building block of Amazon RDS is the DB instance. A DB instance is an isolated database environment in the AWS Cloud. Setup in high availability with a primary instance and a synchronous secondary instance that you can fail over to when problems occur.
ElastiCache	Allows to seamlessly set up, run, and scale popular open-Source compatible in-memory data stores in the cloud. Build data-intensive apps or boost the performance of existing databases by retrieving data from high throughput and low latency in-memory data stores.

System Overview and Flow

Mobile users retrieve an identity from Amazon Cognito, that offers mobile ID and data synchronization across mobile devices. Once a mobile user has received an identity, the user is granted access to other AWS services.

User-generated media files are stored in Amazon Simple Storage Service (Amazon S3)

Mobile users then access their digital assets stored in S3 through Amazon CloudFront, a low latency, content delivery network

Mobile users send requests to Amazon API Gateway to access application logic and dynamic data. API Gateway acts as an entry point for mobile applications to access functionality.

To boost the performance of applications by adding an in-memory caching layer(Amazon ElastiCache). The cache-aside strategy is added for boosting database performance

A high availability with a primary instance and a synchronous secondary instance RDS DB setup so that it have ability to fail over when problems occur.

Application traffic then been automatically distributed to EC2 intances via Elastic Load Balance across across Availability Zones A & B

Mobile applications require a highly scalable backend infrastructure to support the variable usage created by mobile users.

Budget

Category	Type	Region	Instance type	Instance size	Platform	Role	Engine	Data	Count	Unit price	Total cost
Compute	EC2	ap-south-1	m5	large	linux				2	$73.73	$147.46
Compute	EC2	ap-southeast-1	m5	large	linux				2	$87.60	$175.20
Storage	S3	ap-southeast-1						10	1	$0.25	$0.25
Networking	ELB	ap-southeast-1						10	1	$24.24	$24.24
Database	Elasticache	ap-south-1	t3	medium			memcached		1	$62.05	$62.05
Database	Elasticache	ap-southeast-1	m3	medium			memcached		1	$87.60	$87.60
Database	RDS	ap-south-1	m5	large		standby	mysql		1	$175.93	$175.93
Database	RDS	ap-southeast-1	m5	large		primary	mysql		1	$171.55	$171.55
Appservices	APIgateway	ap-southeast-1							1	$60.67	$60.67
					TOTAL						**$904.95**

Budget