

AWS -OVERVIEW

AWS Global Datacenter

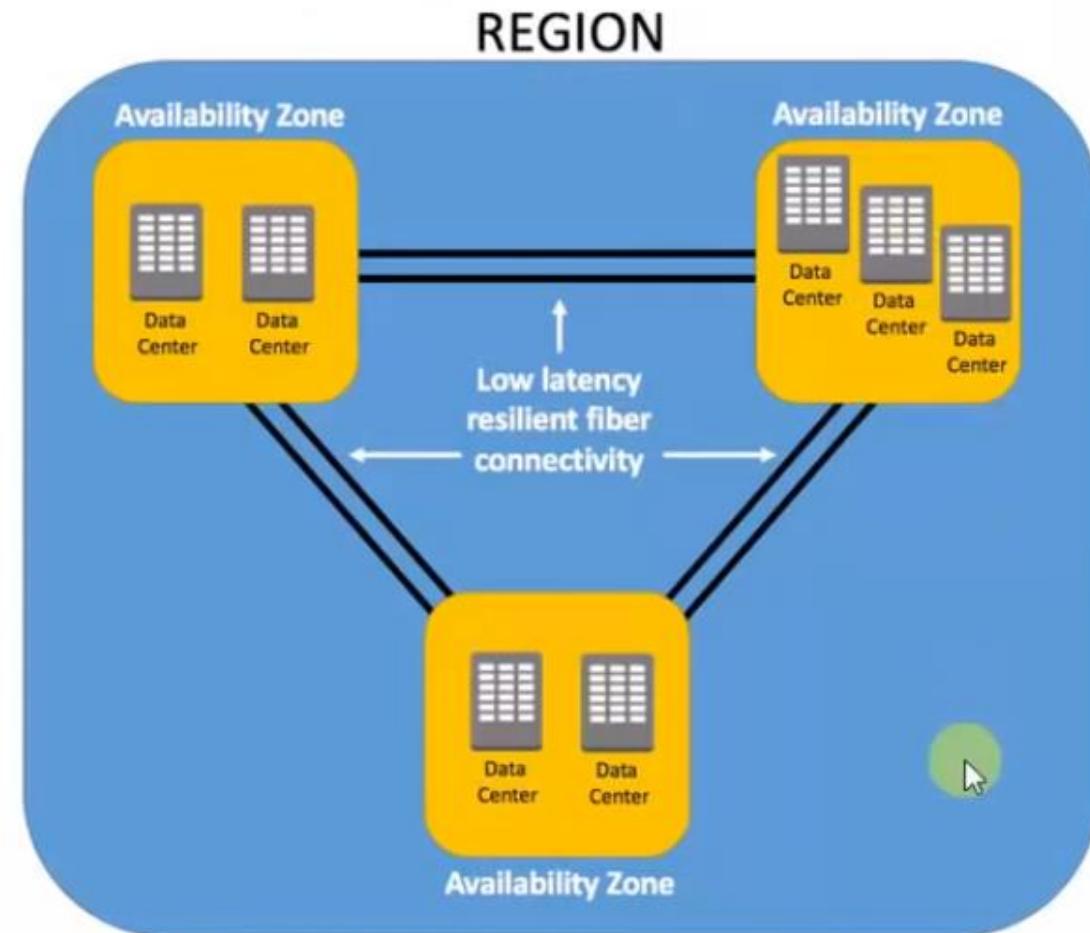
- 20 Regions + 5 Coming soon
 - 61 Availability Zones
 - 158 Edge locations
 - 11 Regional Caches
 - 130 + Services



Region and Availability Zones

Region = Independent Geographic Area

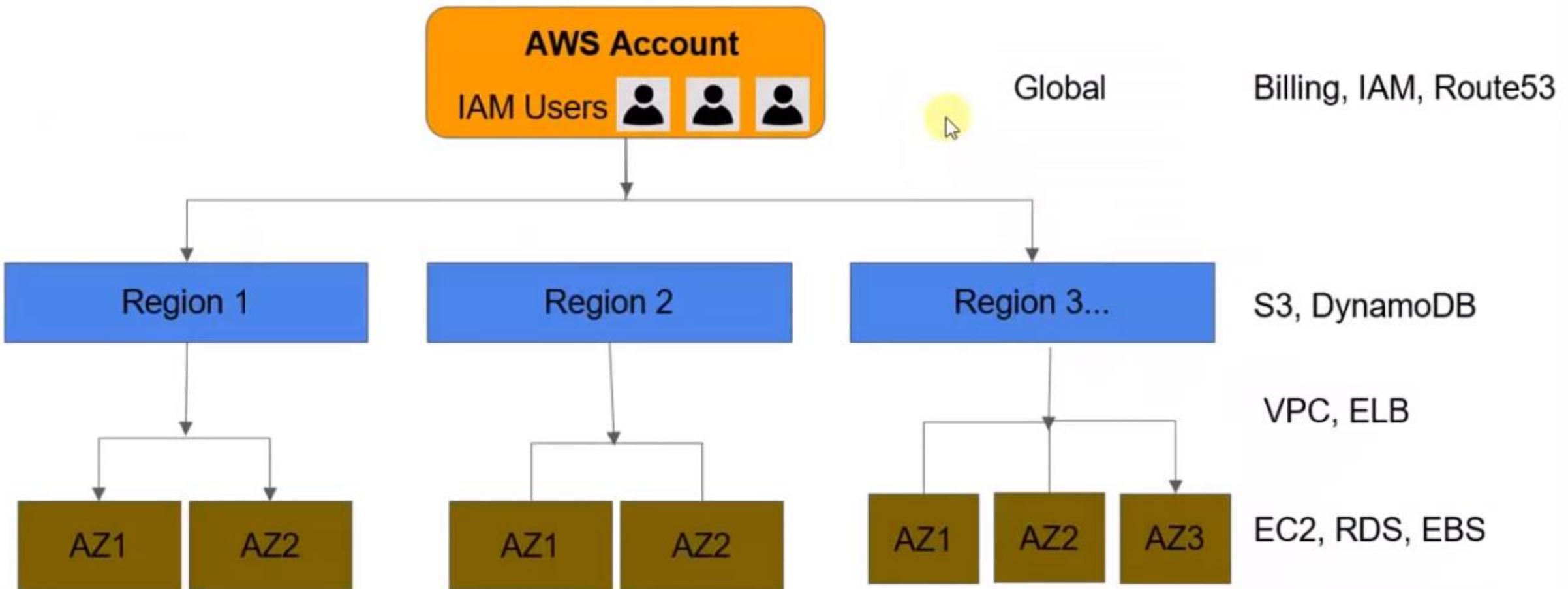
Availability Zone = Multiple isolated locations / data centers within a region



*Region contains at least 2 AZs (except for Osaka region)

US West - California (us-west-1)

AWS Account, Users and Services scope



AWS Compute and Analytics Services



EC2

Elastic Compute Cloud



EMR

Elastic Mapreduce



Auto Scaling

EC2 Horizontal scaling



Kinesis

Real time data/video streaming



Lambda

Serverless Computing



Athena

Interactive Query Engine



ELB

Elastic Load Balancer



QuickSight

Business Intelligence



ECS

Elastic Container Service



Glue

ETL Service

AWS Storage and Database Services



EBS

Elastic Block Storage



RDS

Relational Database Service



S3

Simple Storage Service



DynamoDB

AWS NoSQL Database



EFS

Elastic File System



Redshift

Data Warehousing



Elasticache

Fast and Flexible caching

AWS Application and Development Services



API Gateway

Managed REST and Websocket APIs



SQS

Simple Queue Service



SNS

Simple Notification Service



SES

Simple Email Service



Cognito

User Management for Web
& Mobile Apps



CodeCommit

Hosted GIT Repository by AWS



CodeBuild

Continuous Integration Service



CodeDeploy

Automated Deployments



Code Pipeline

Continuous Delivery Service

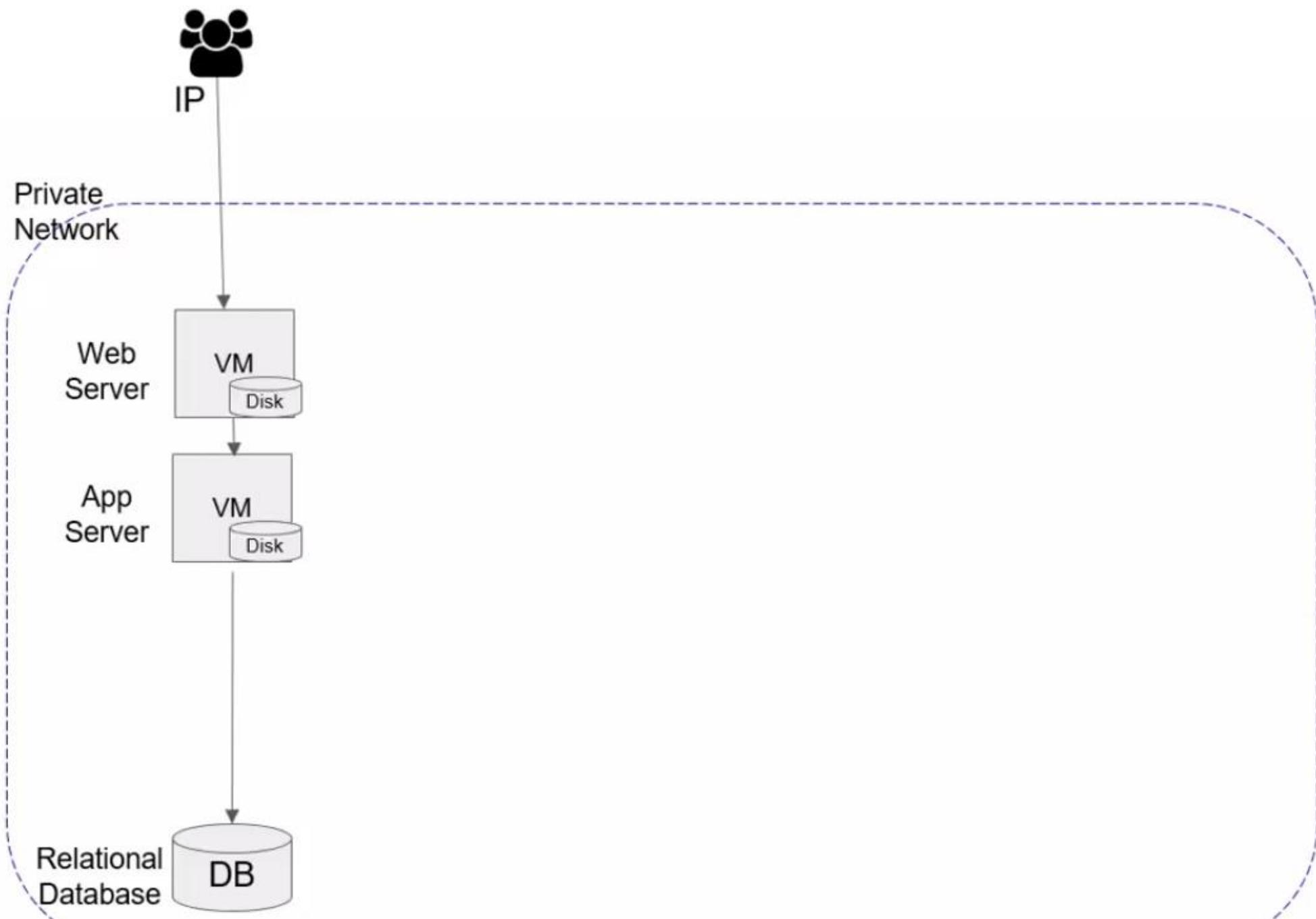


Code Star

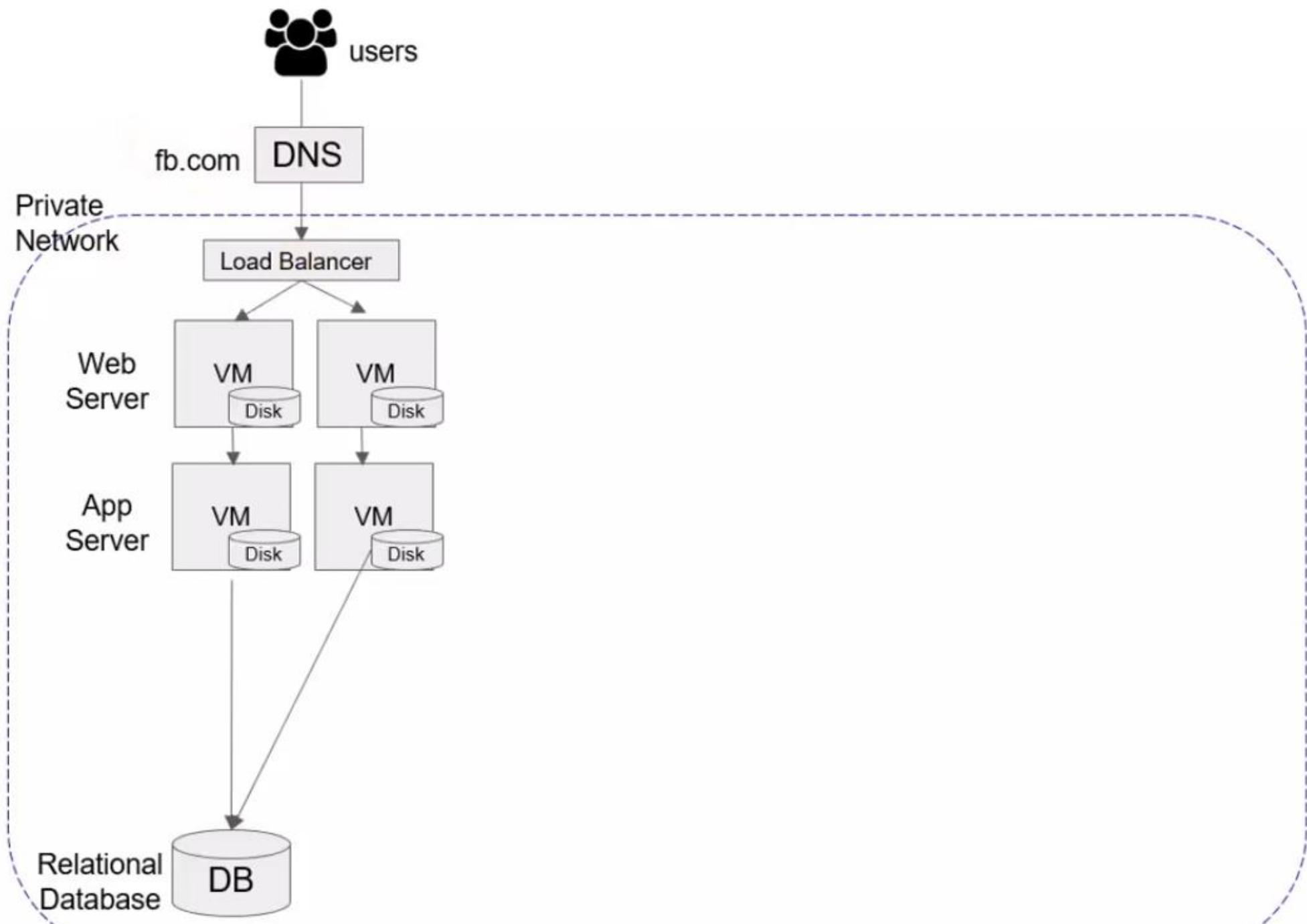
Develop, Build, Deploy, Manage and Track

Let's try to build an Social Media application
(with AWS services)

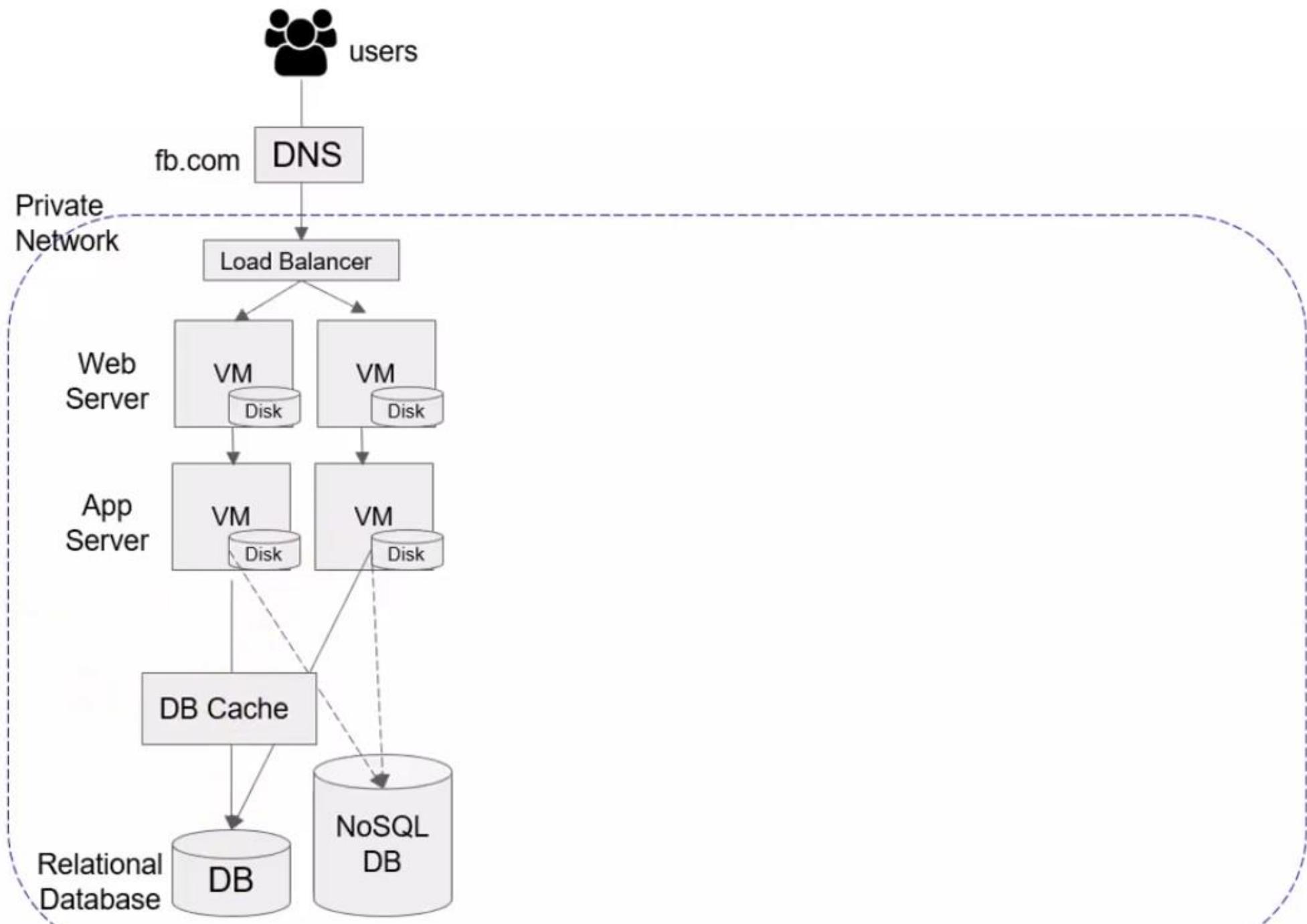
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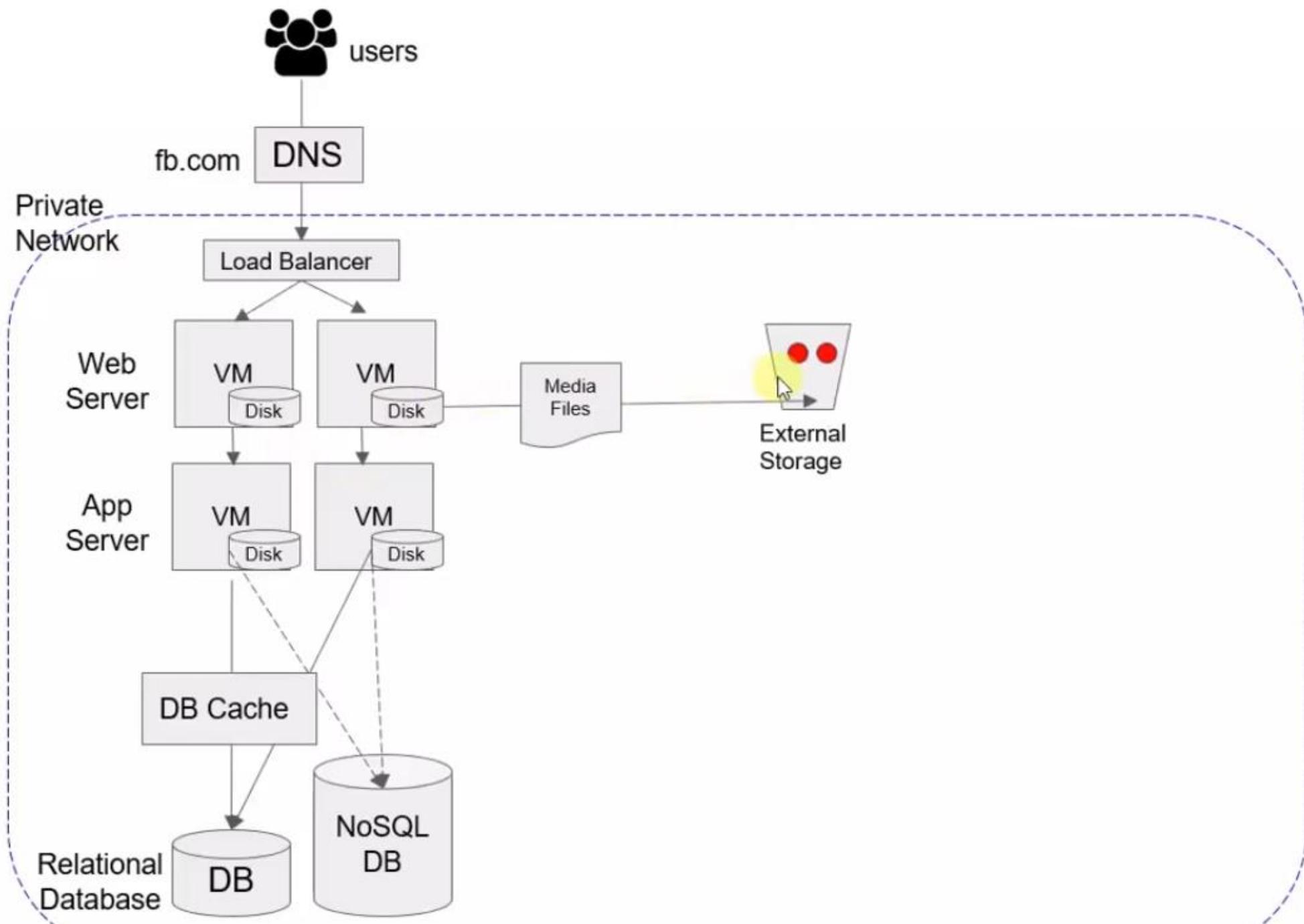


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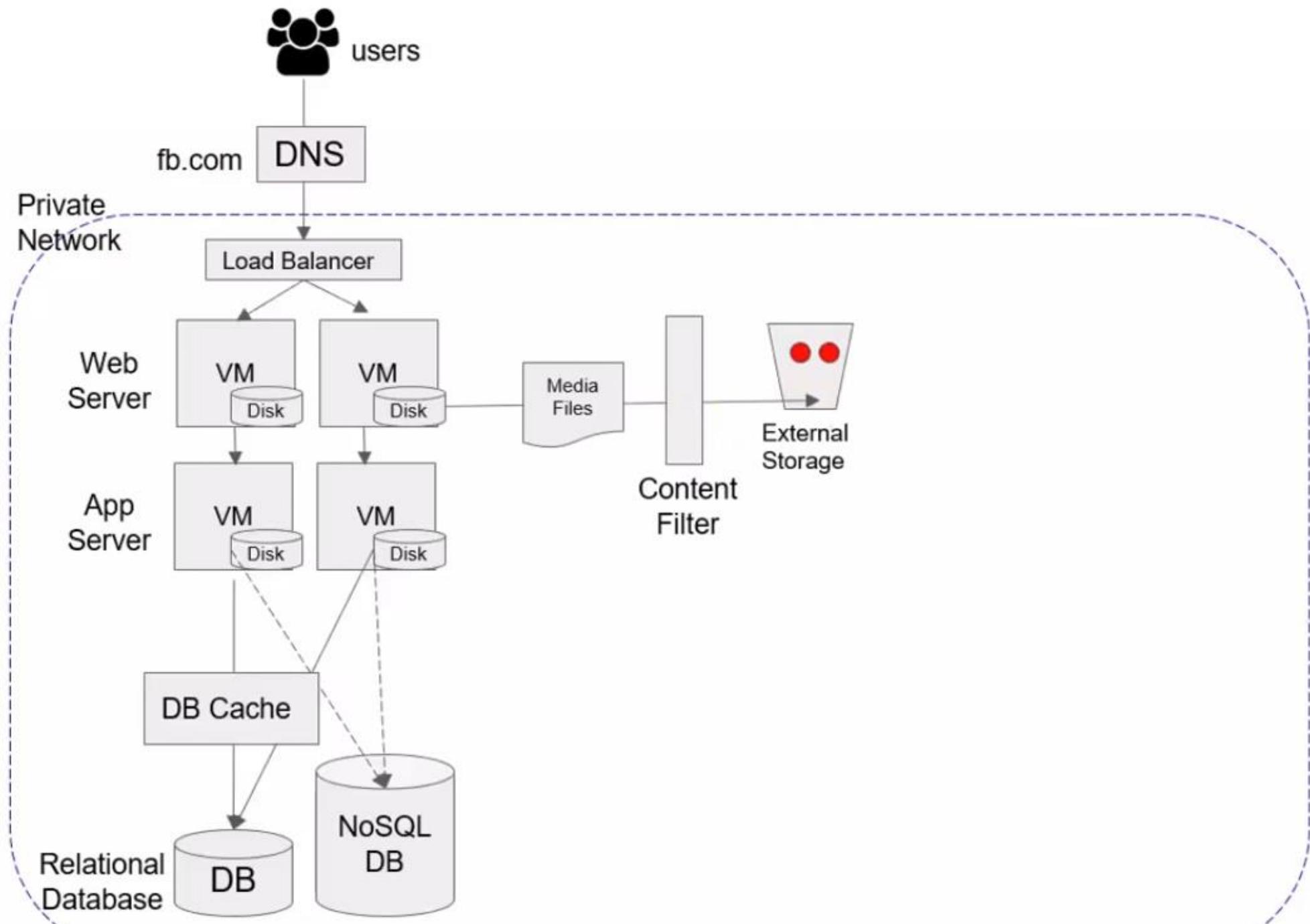


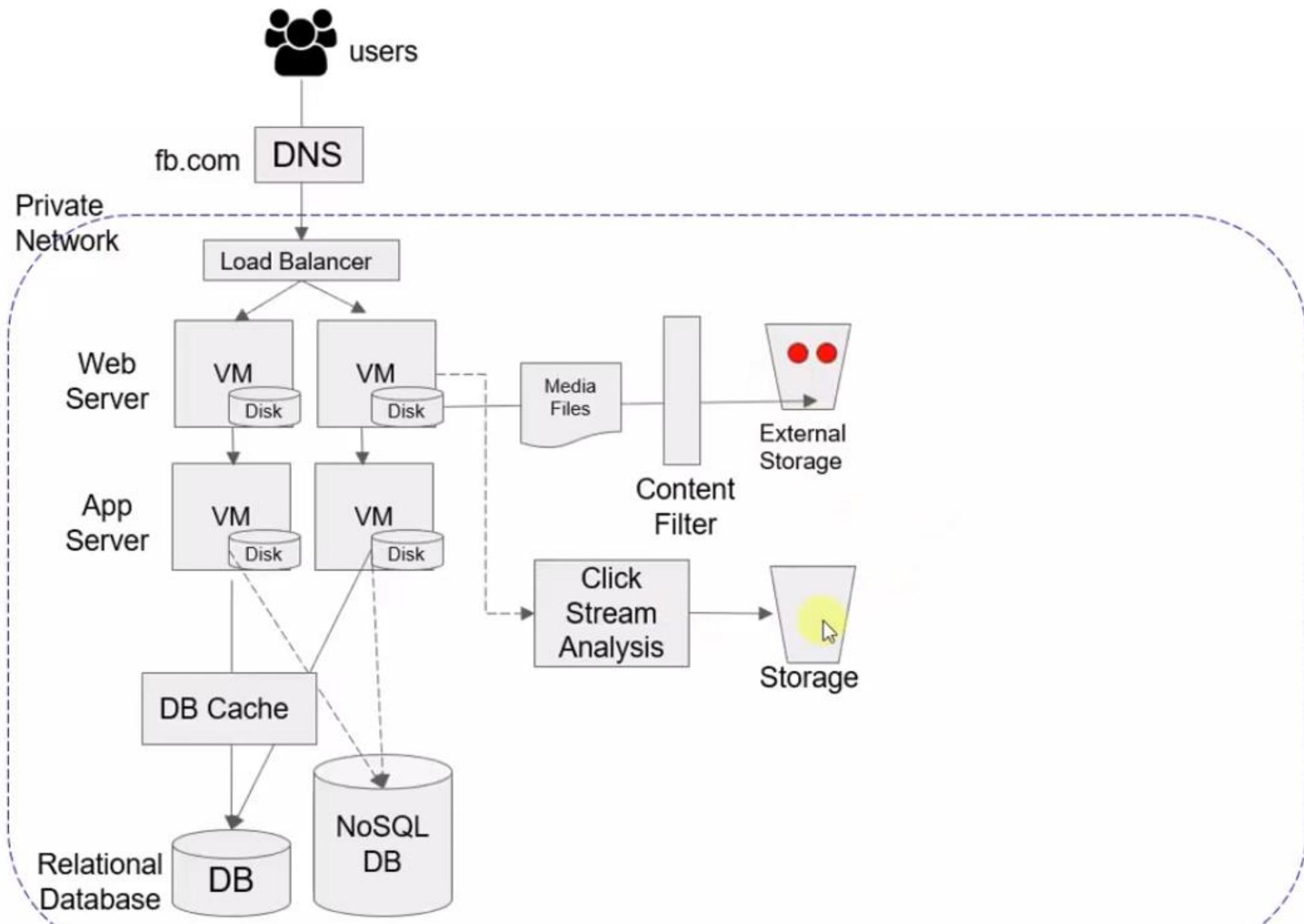
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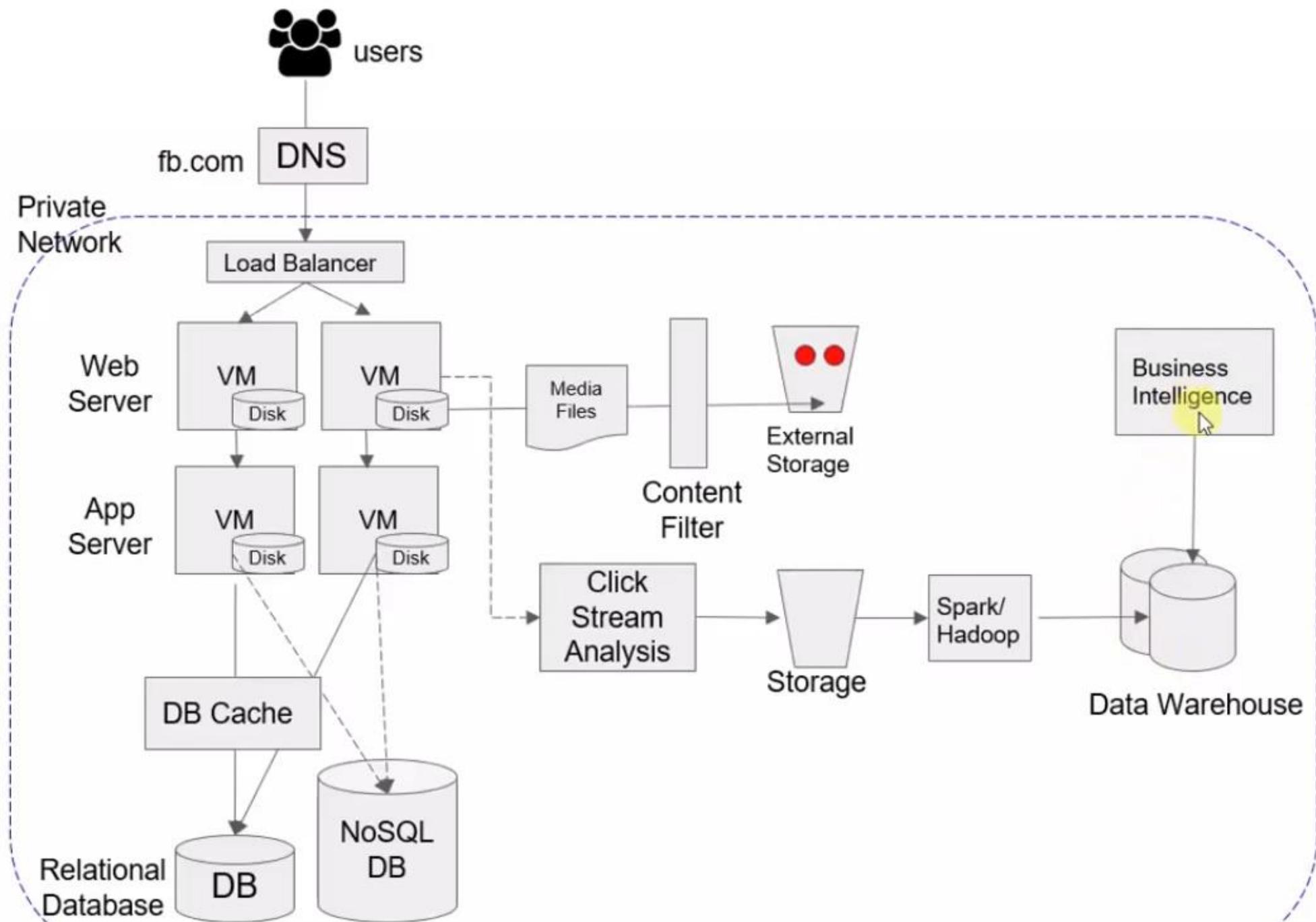




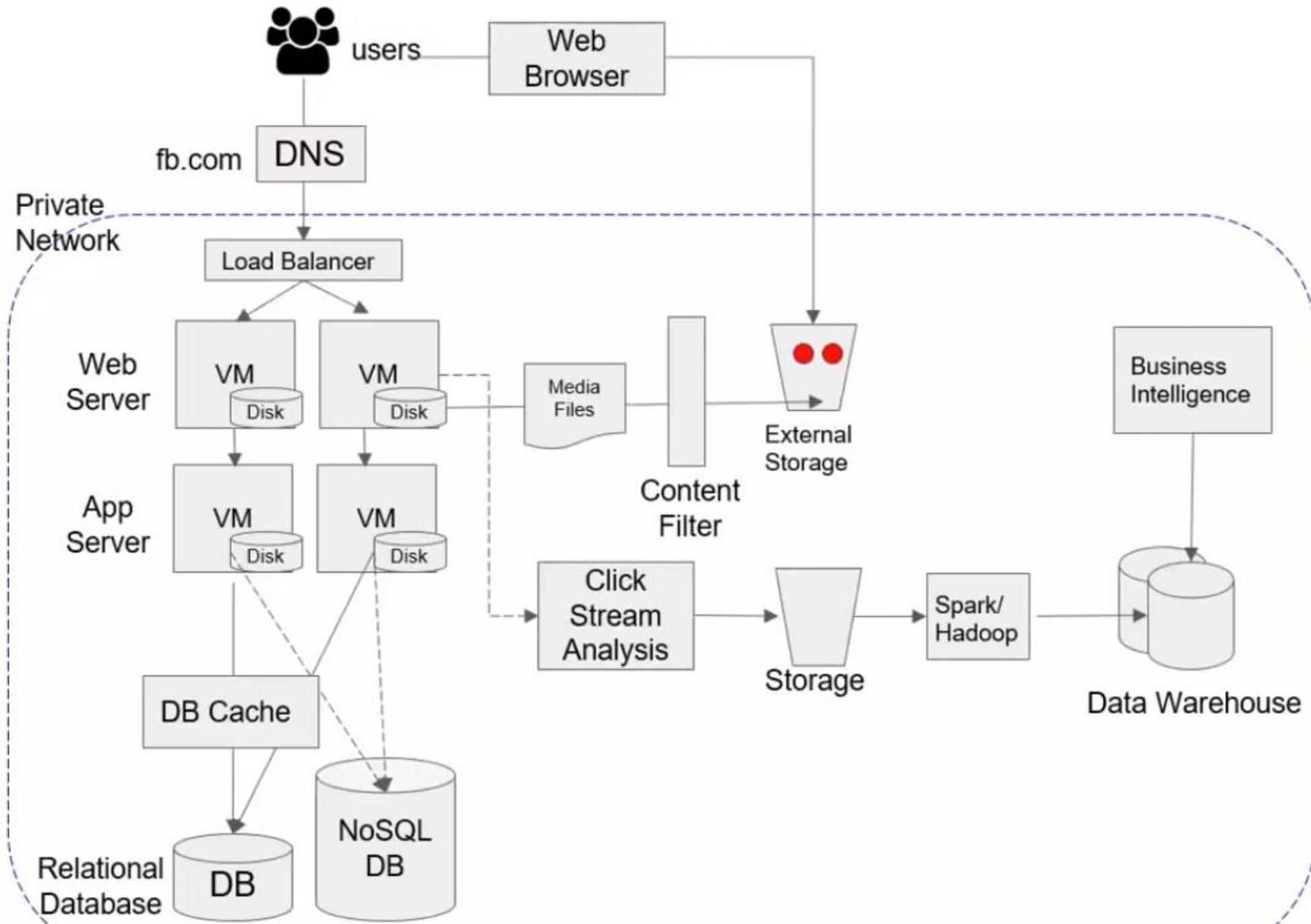
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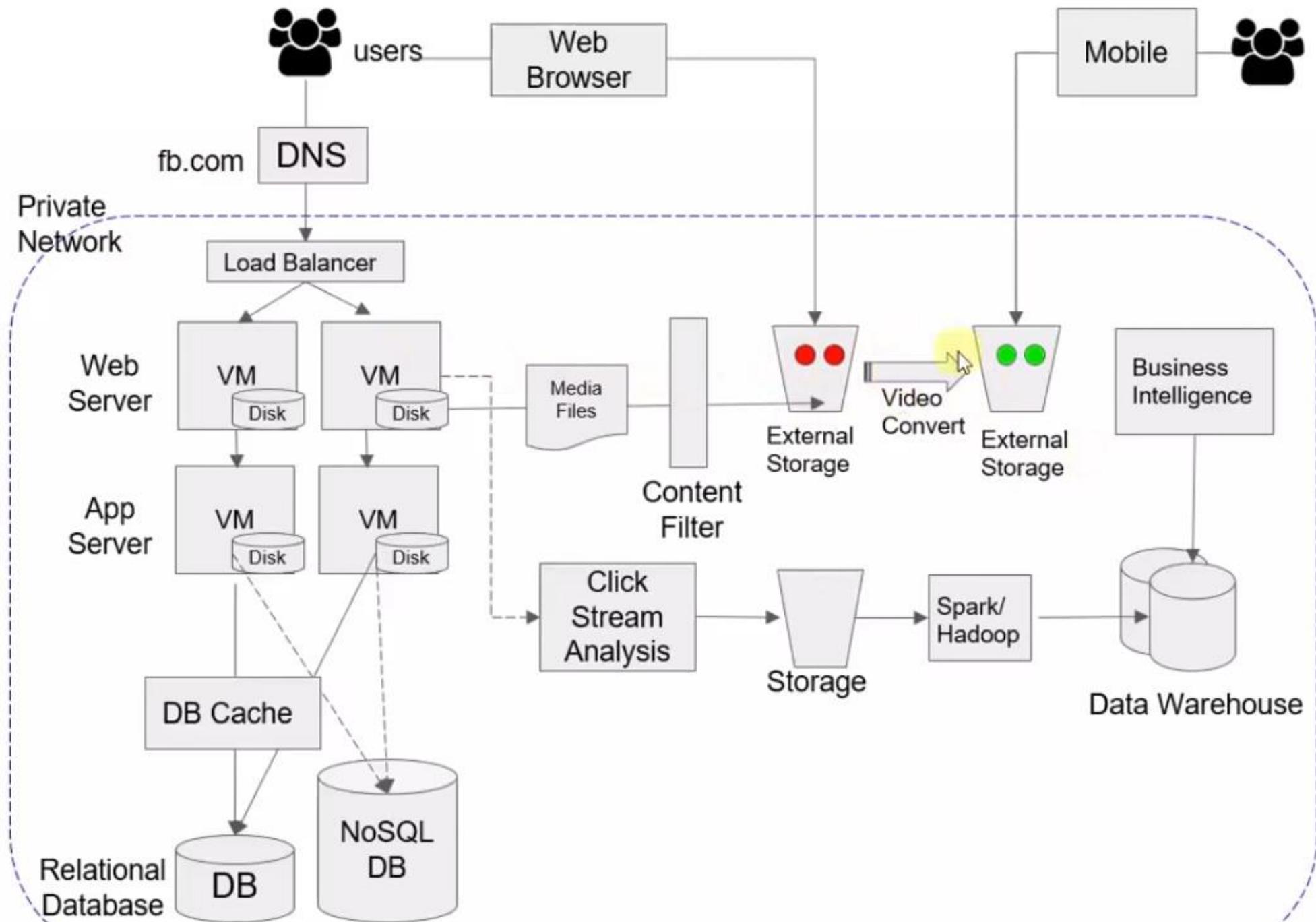


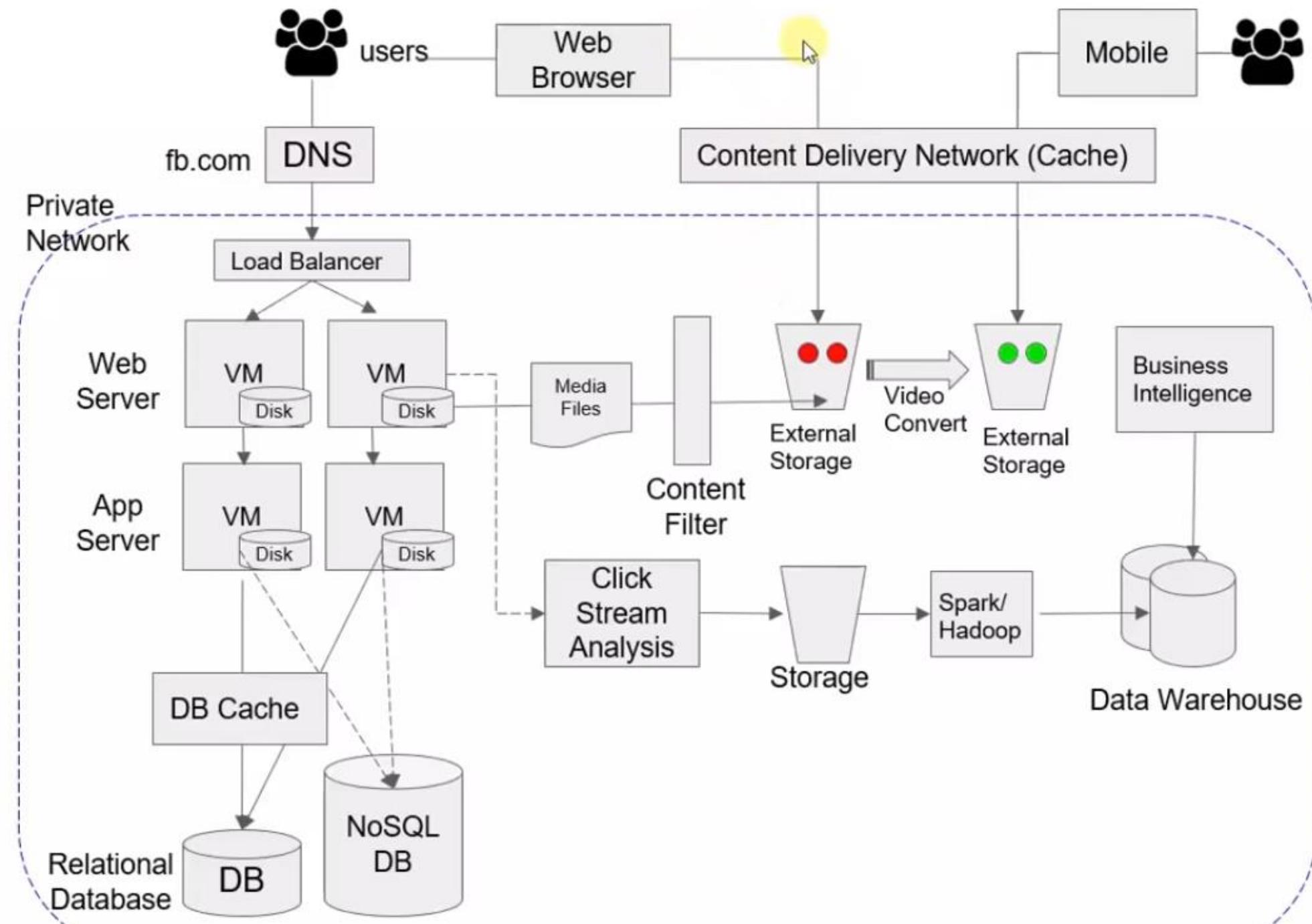




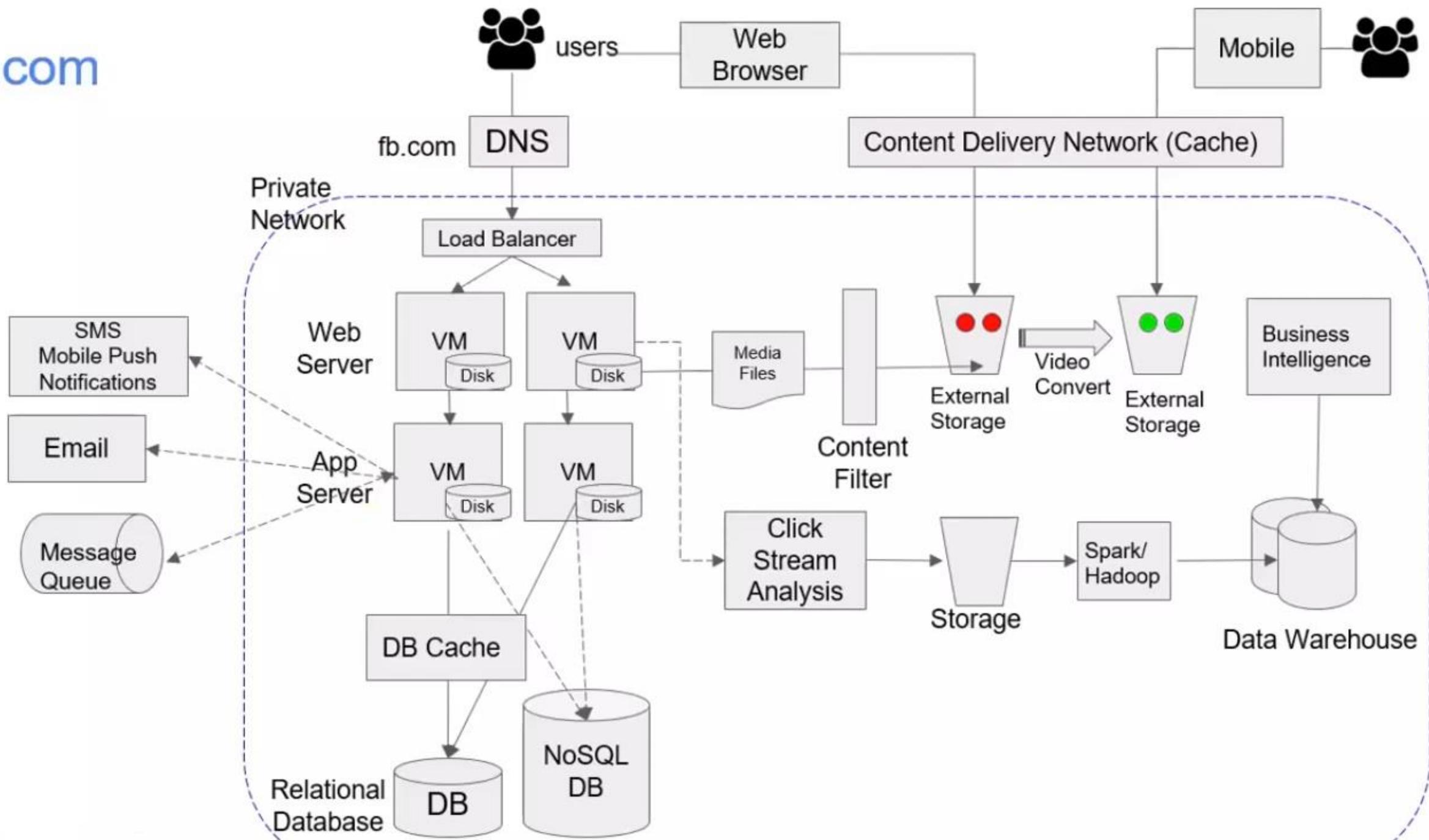
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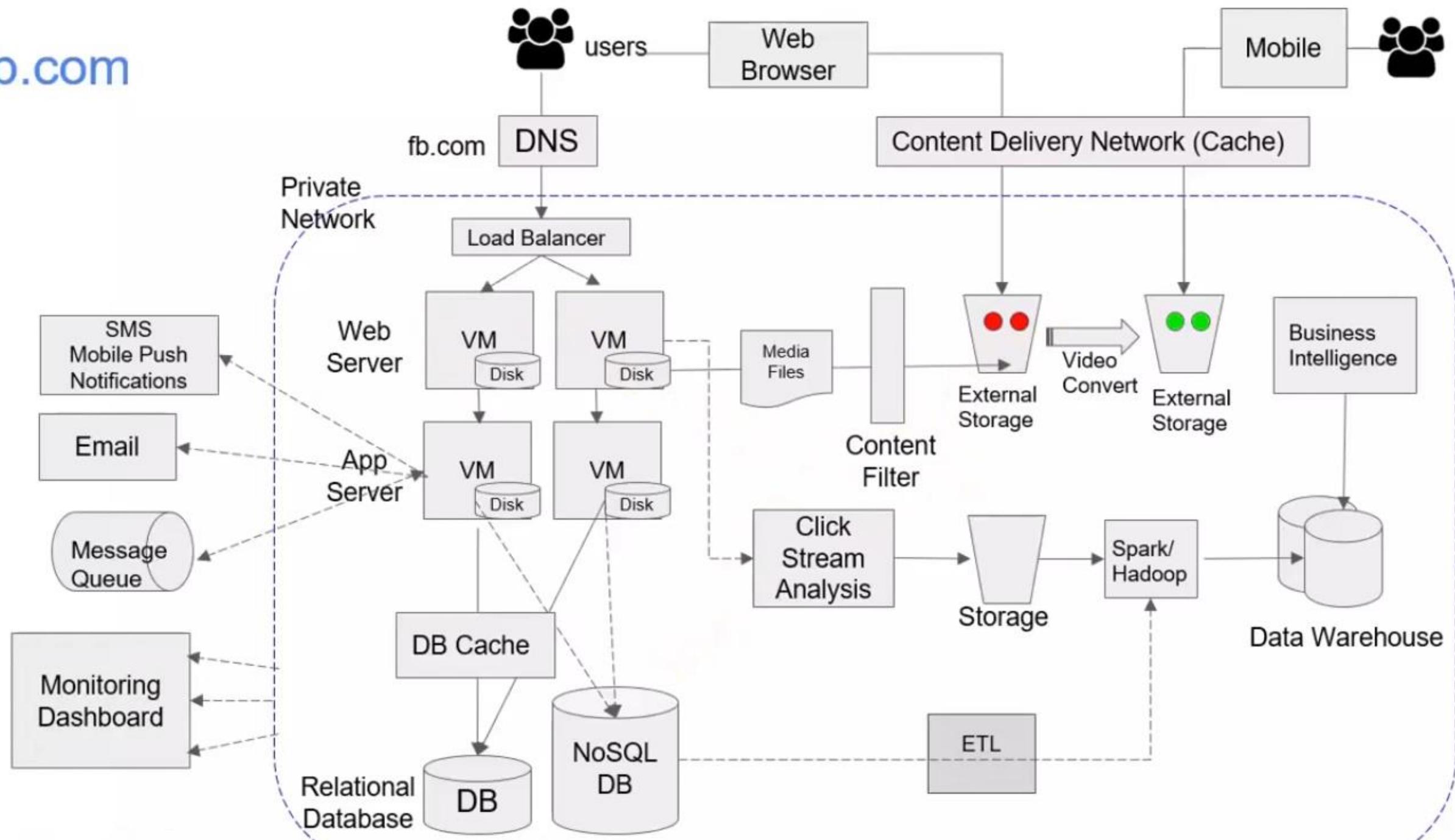




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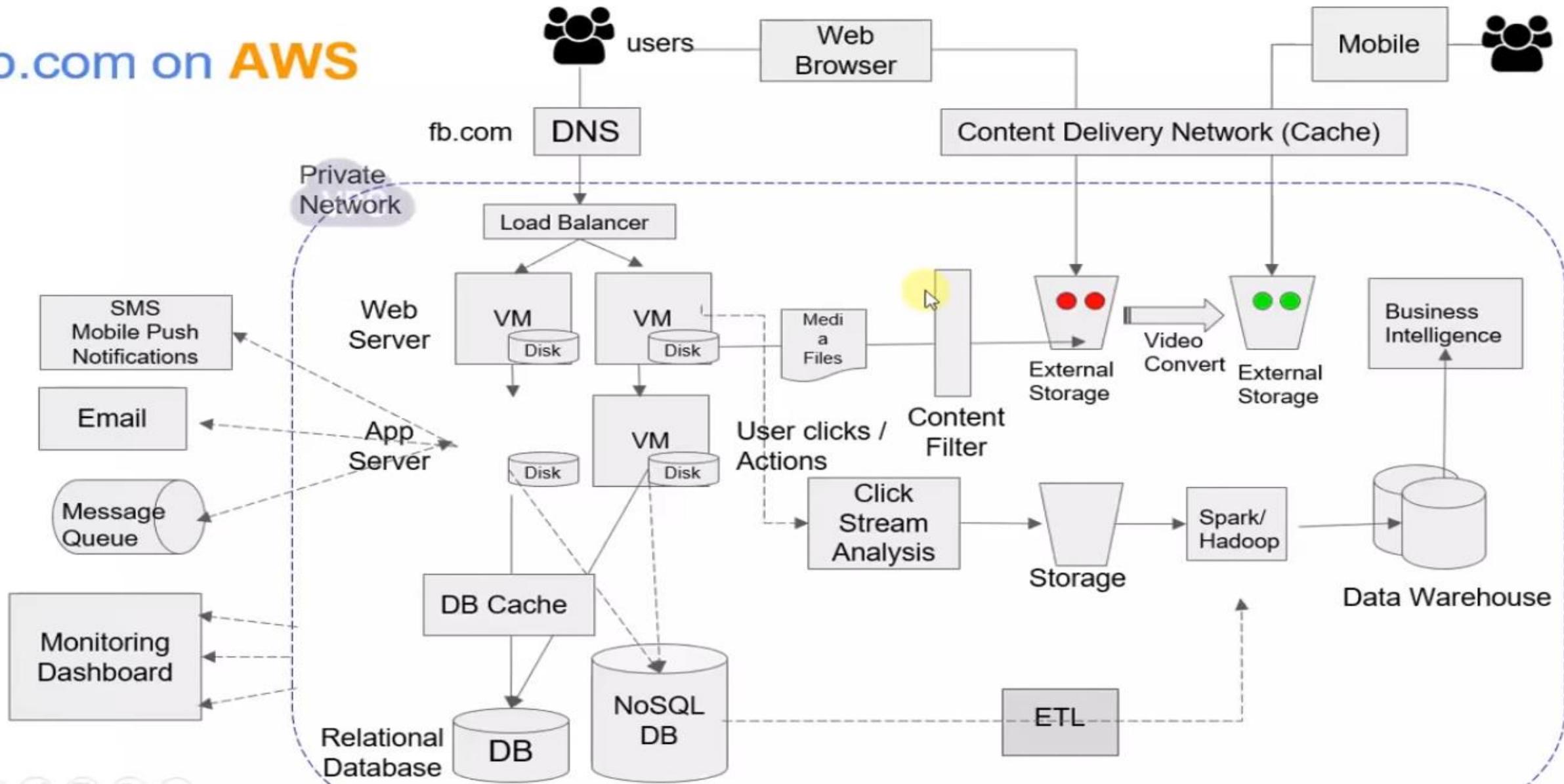


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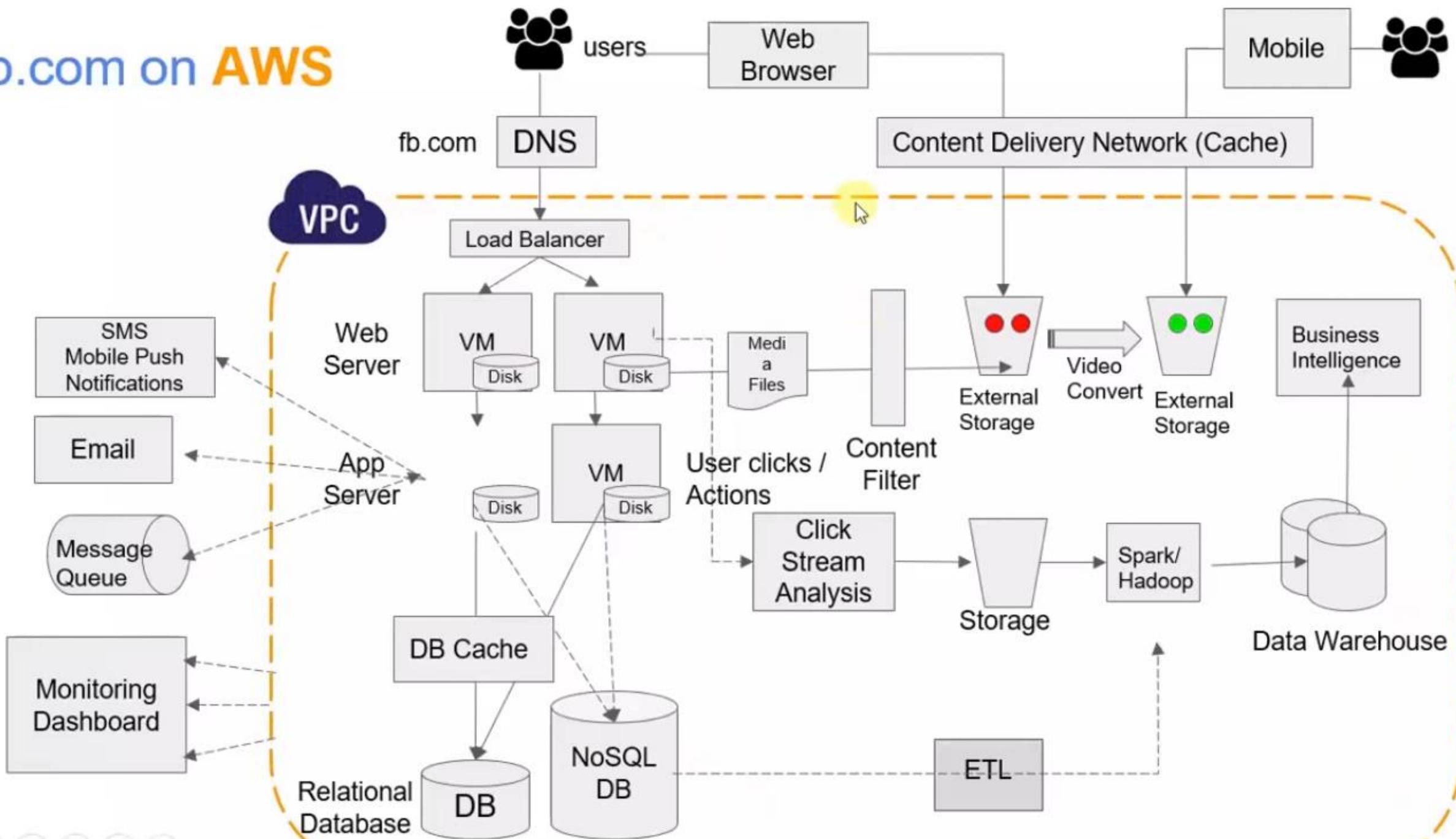


How to do it in AWS

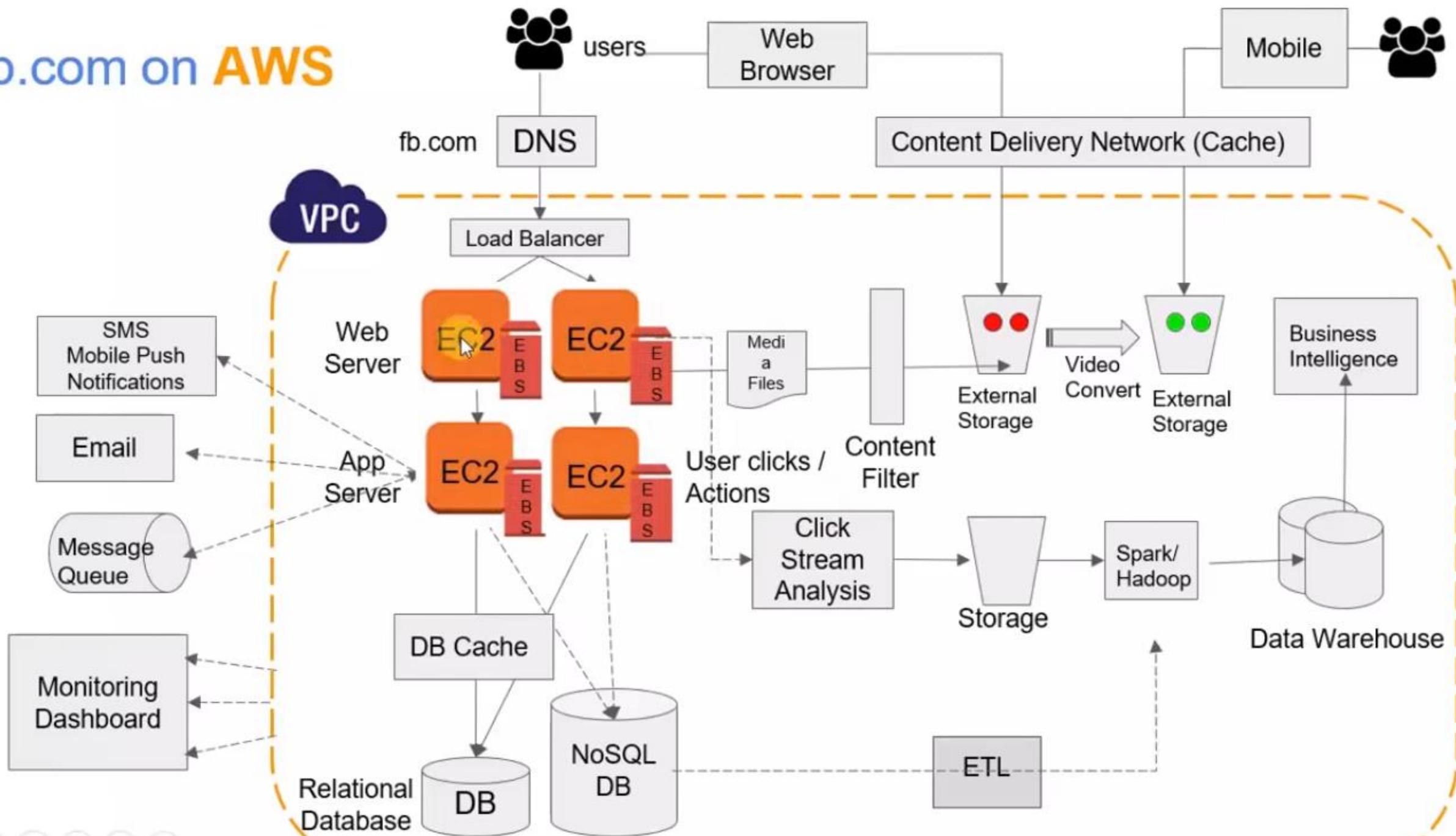
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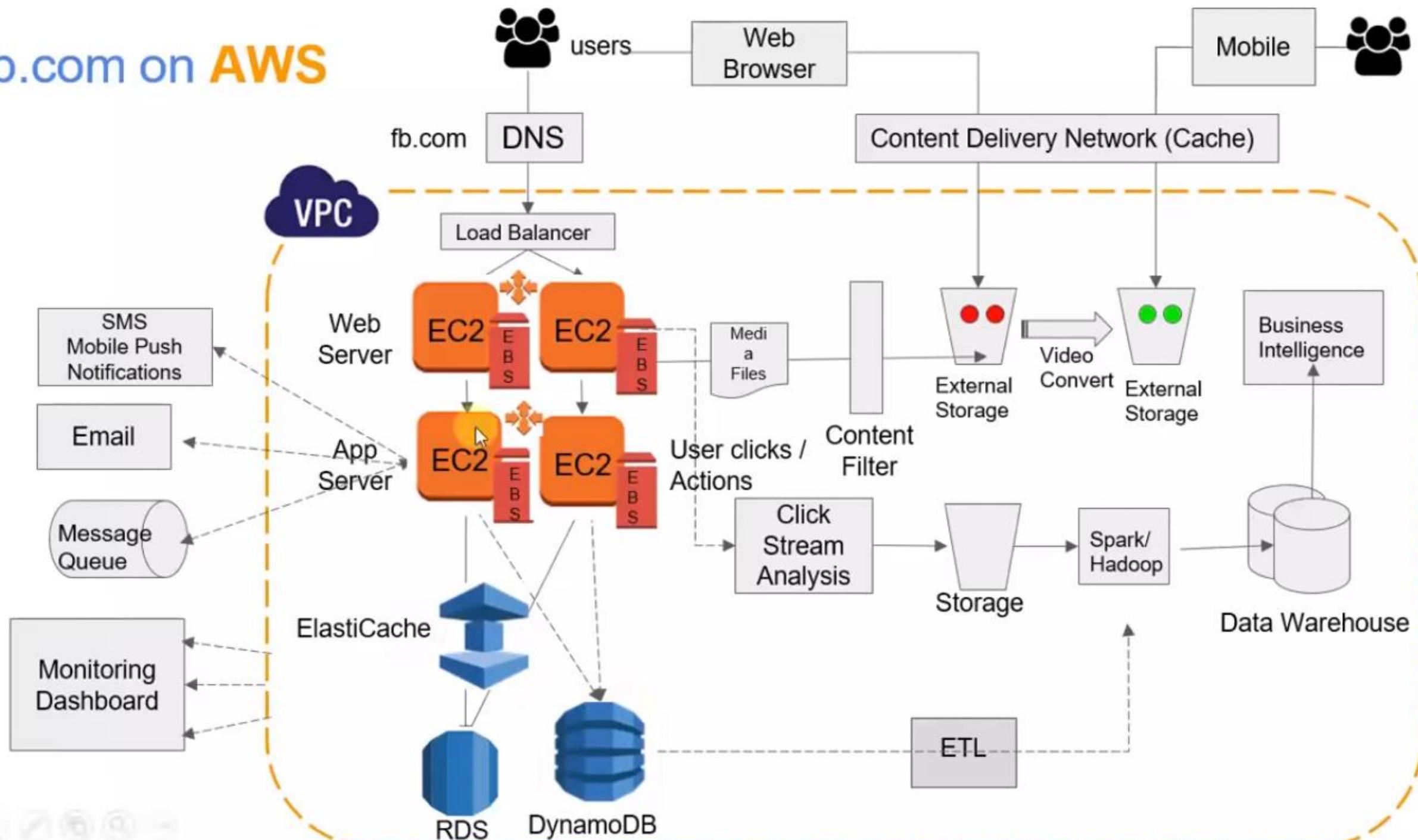
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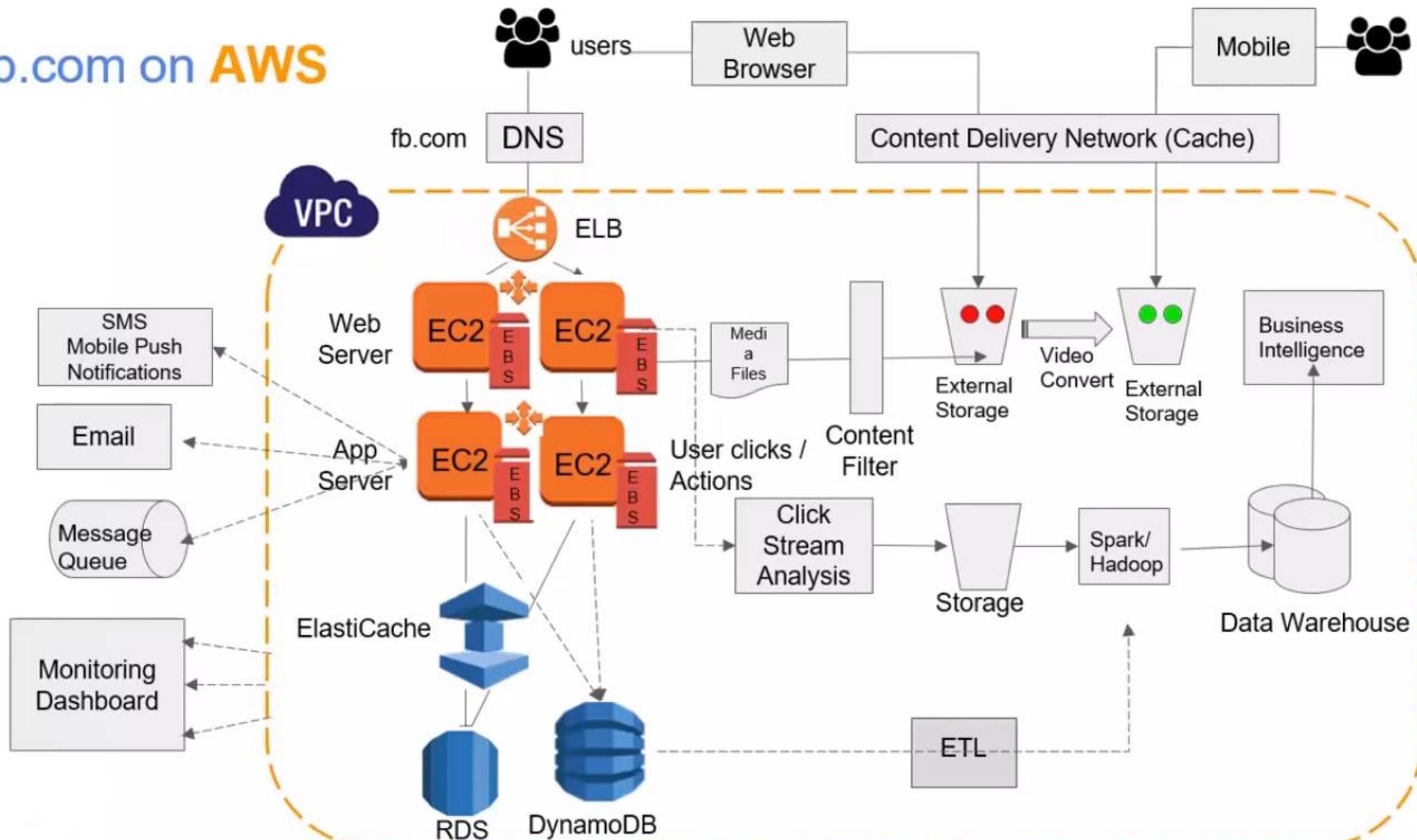
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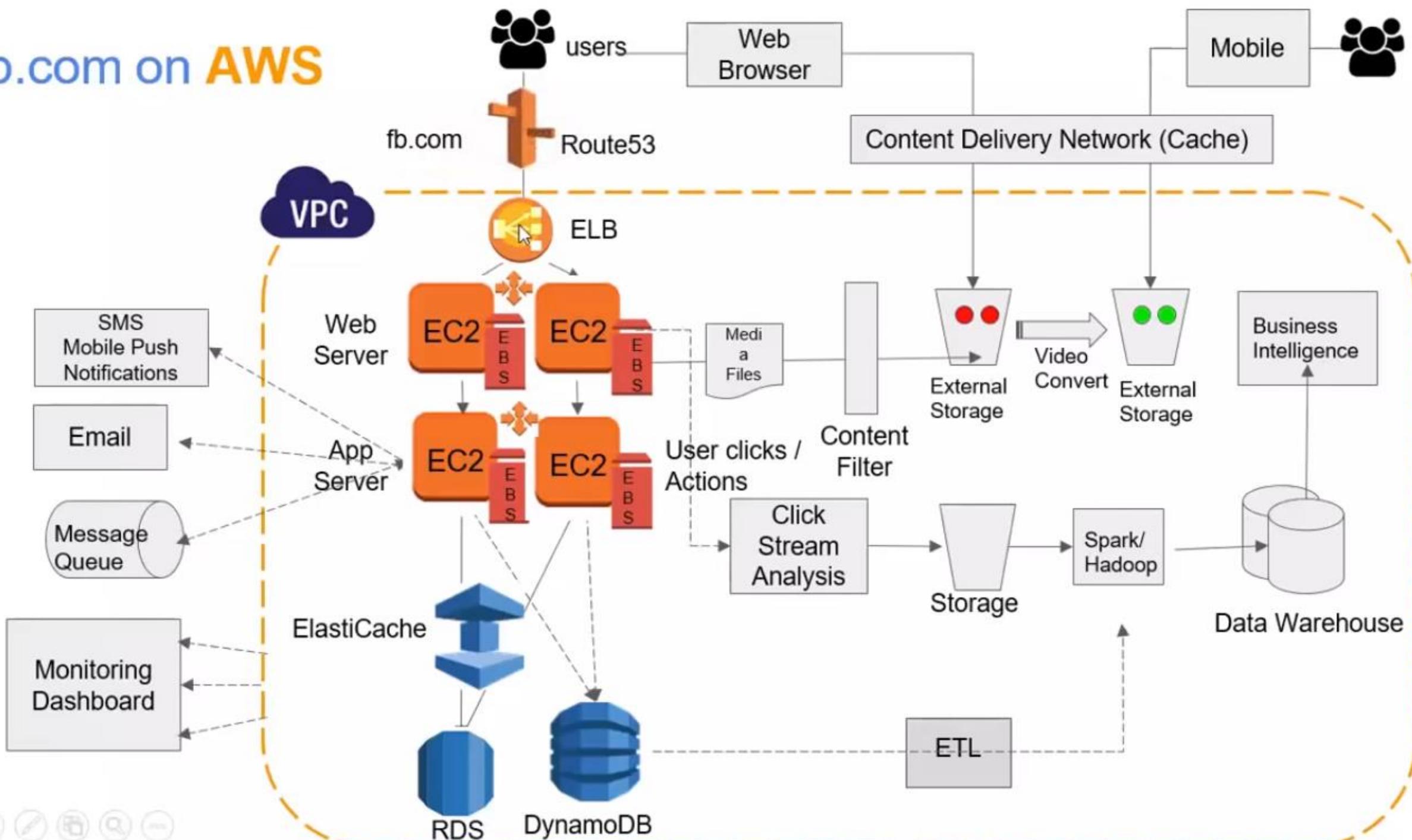
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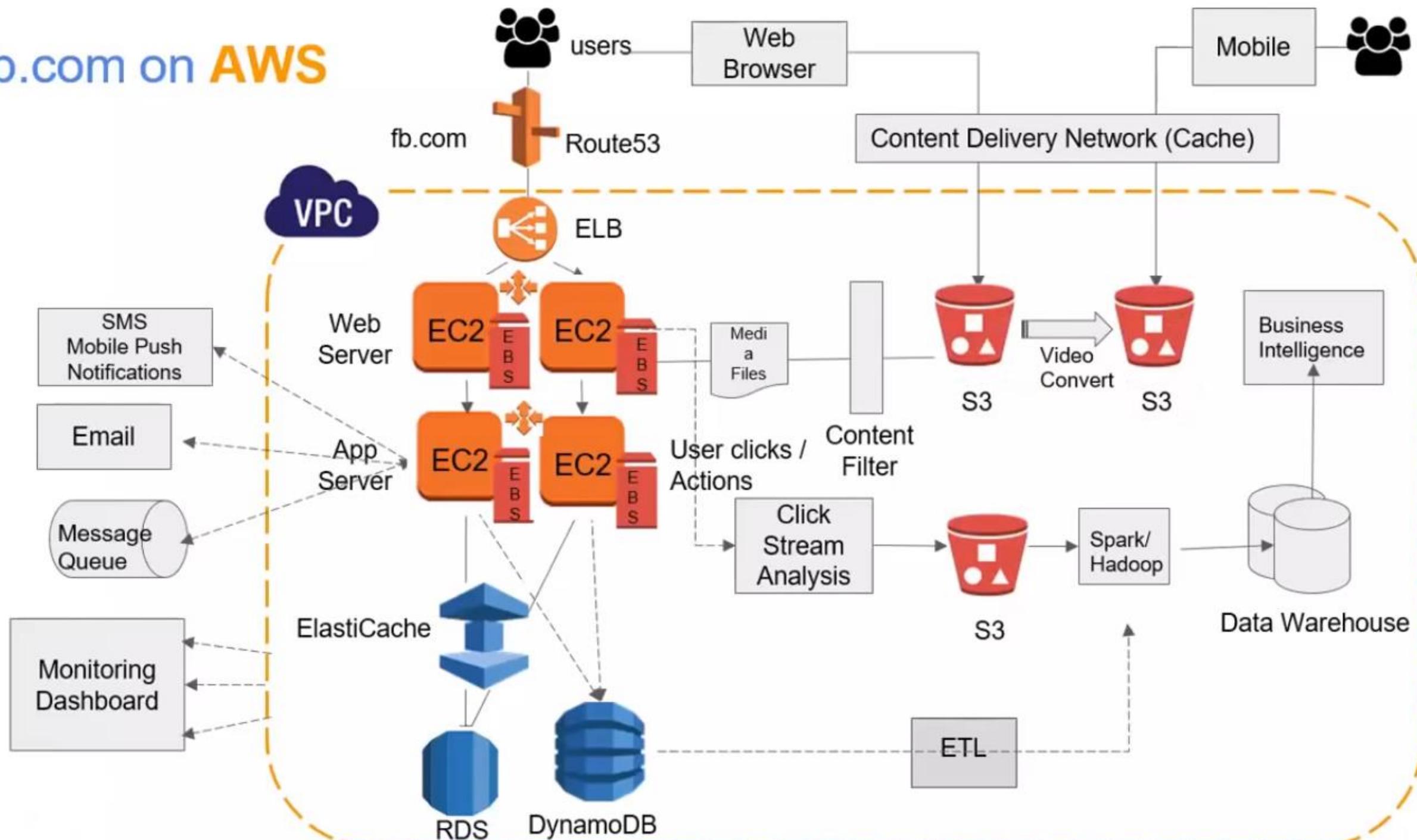
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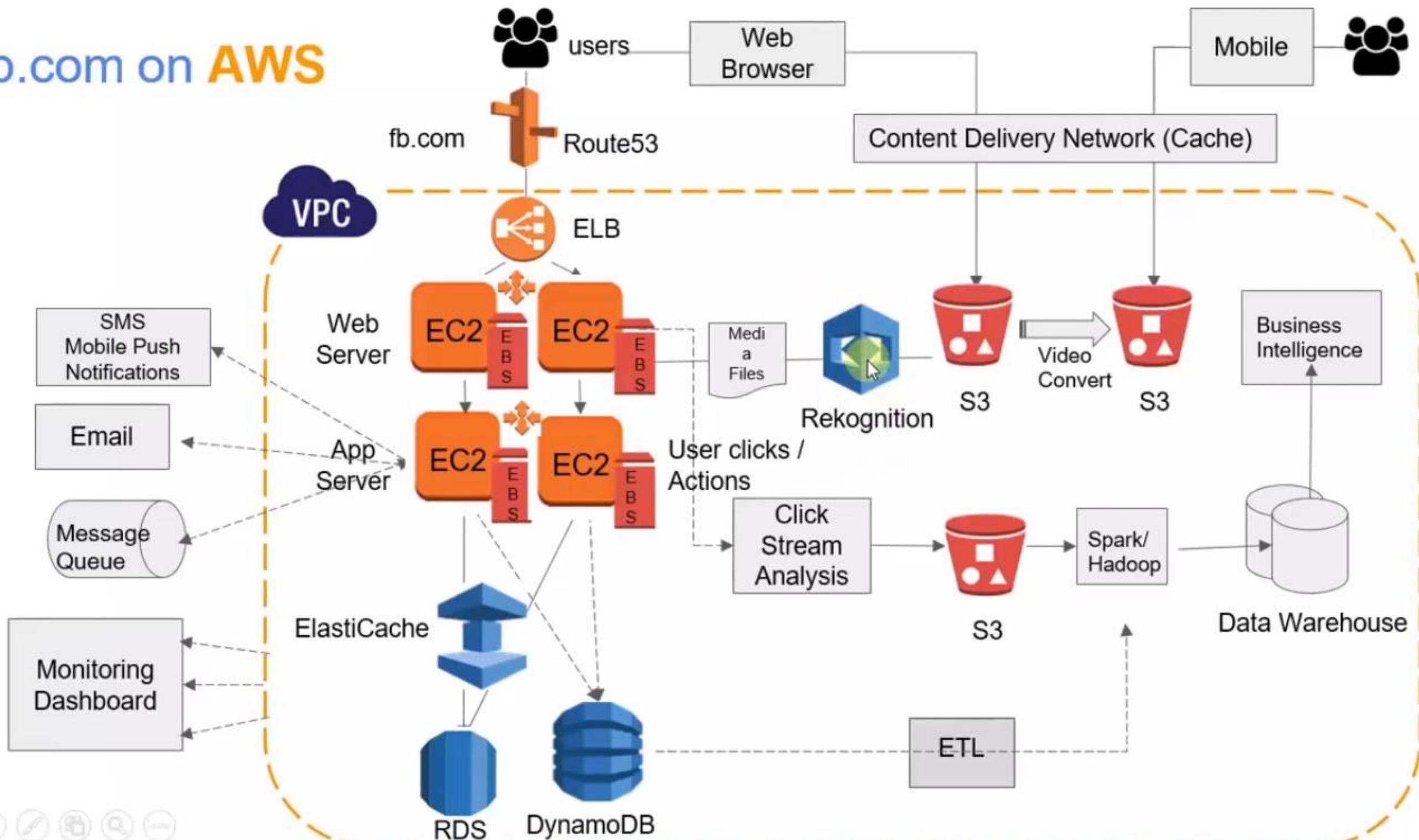
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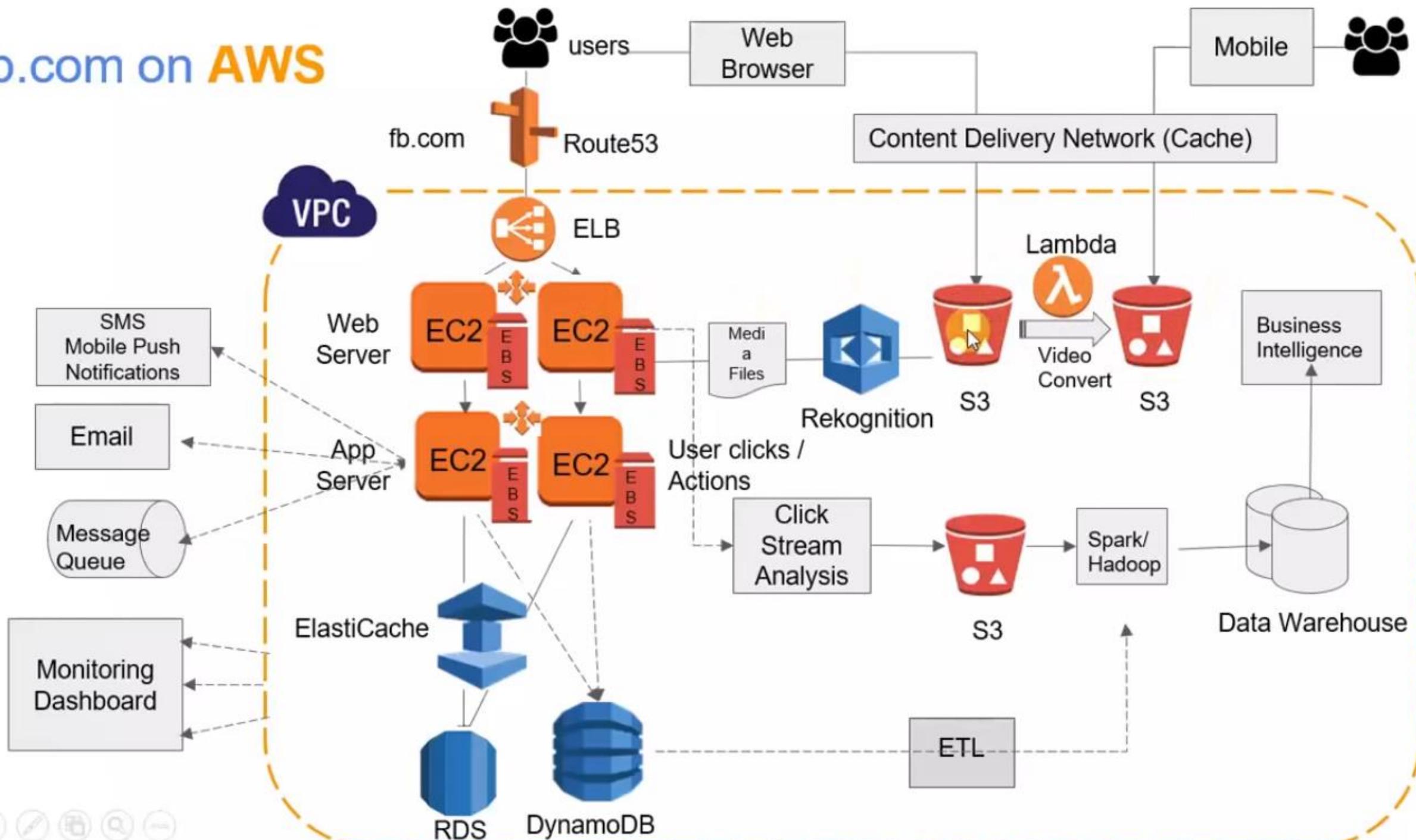
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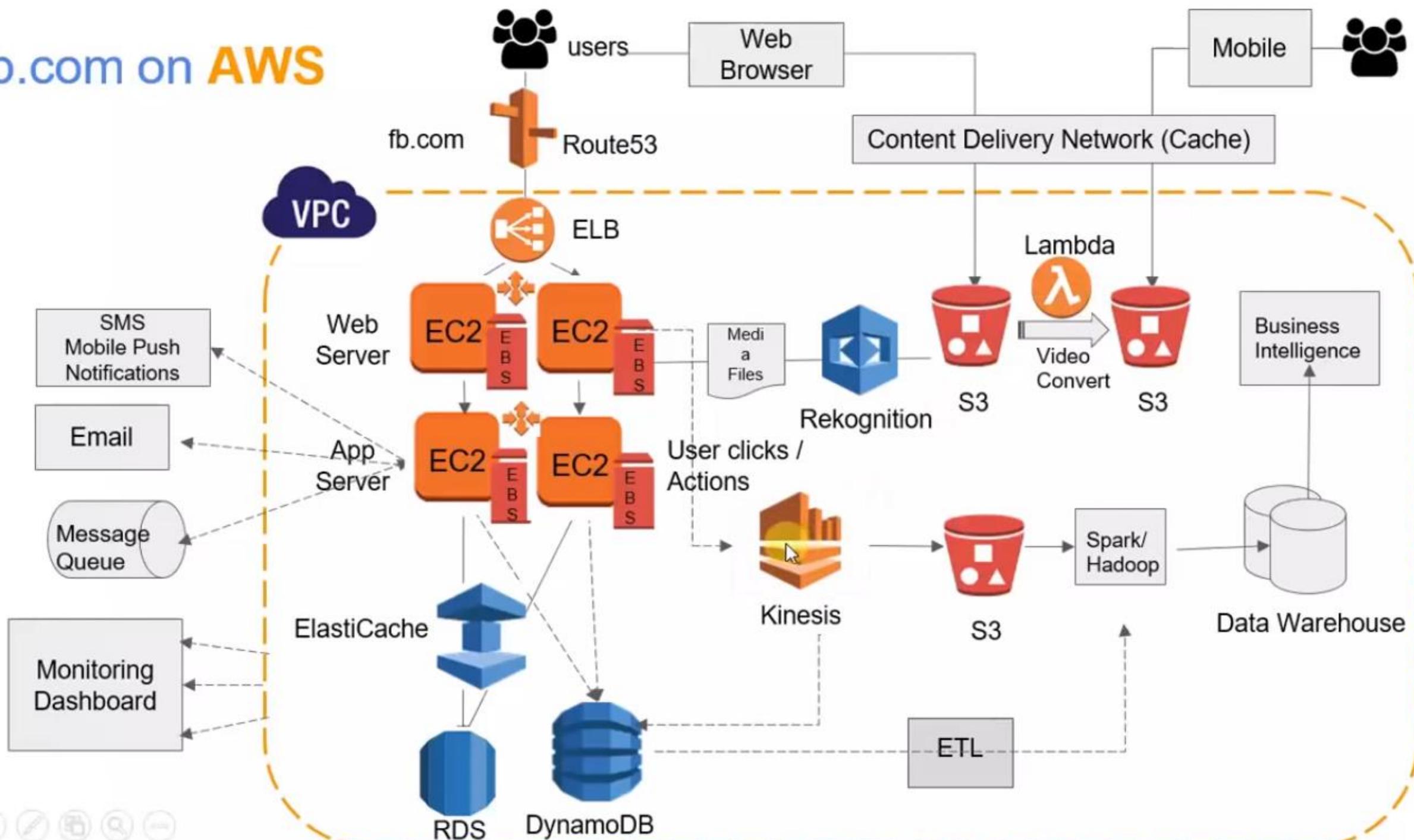
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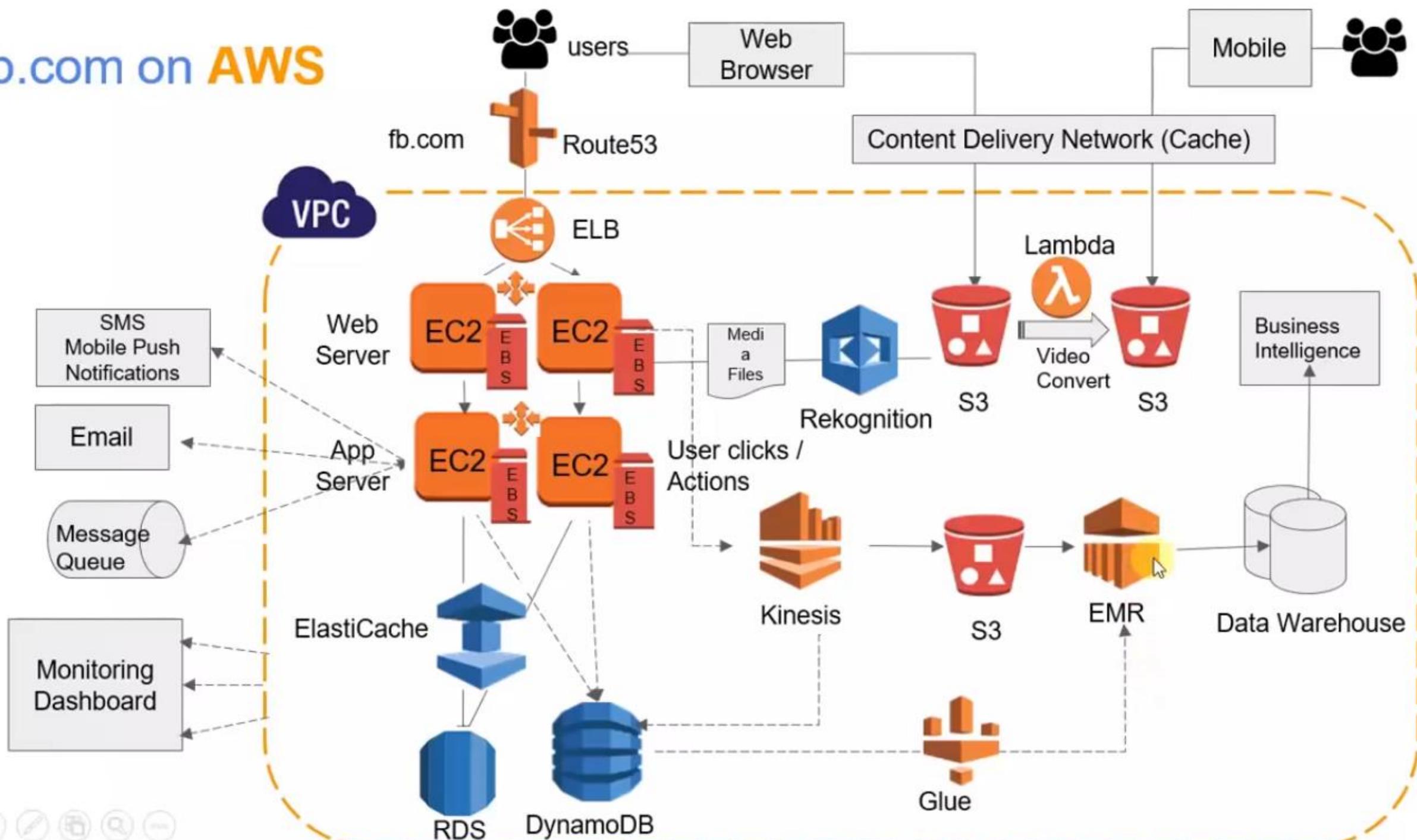
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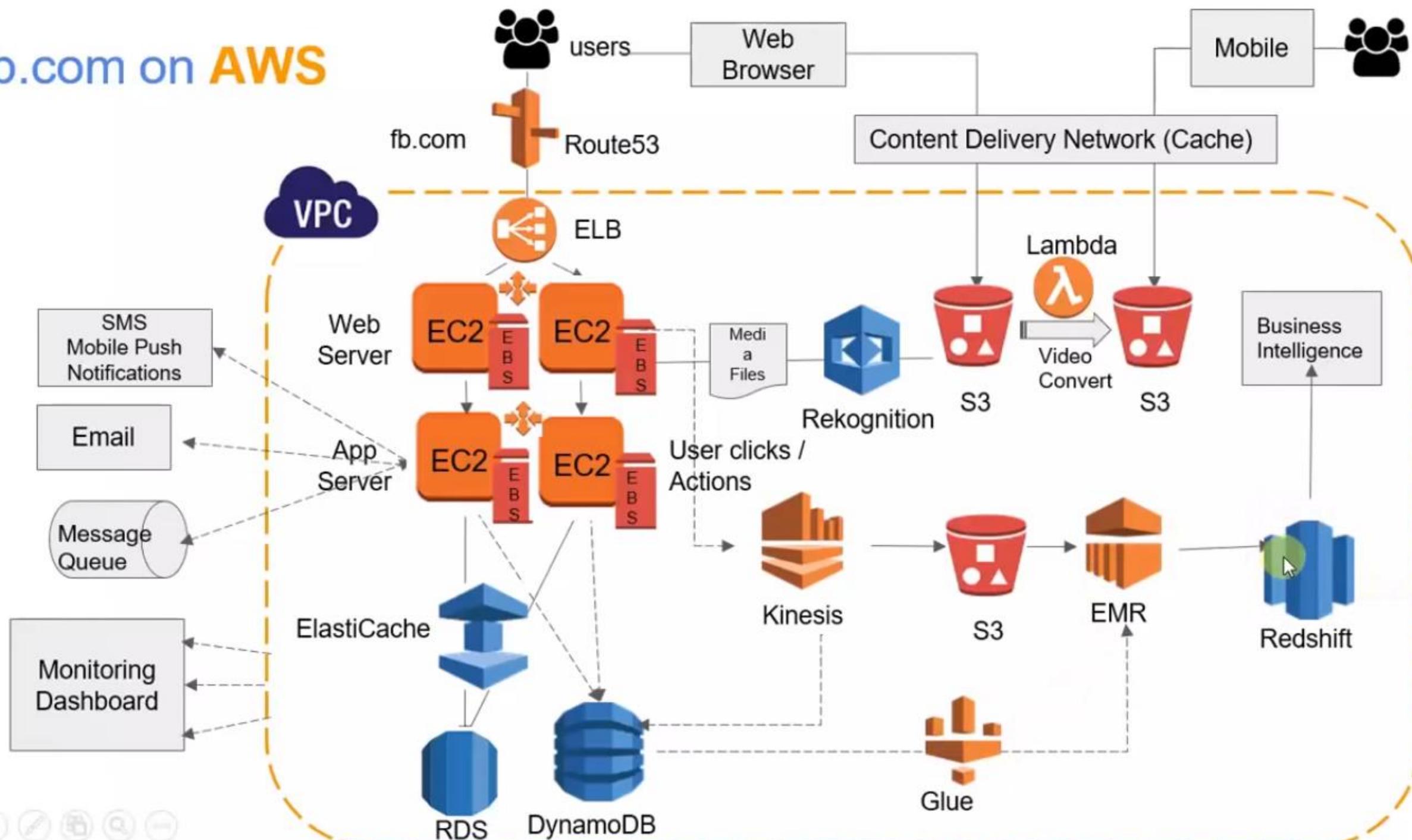
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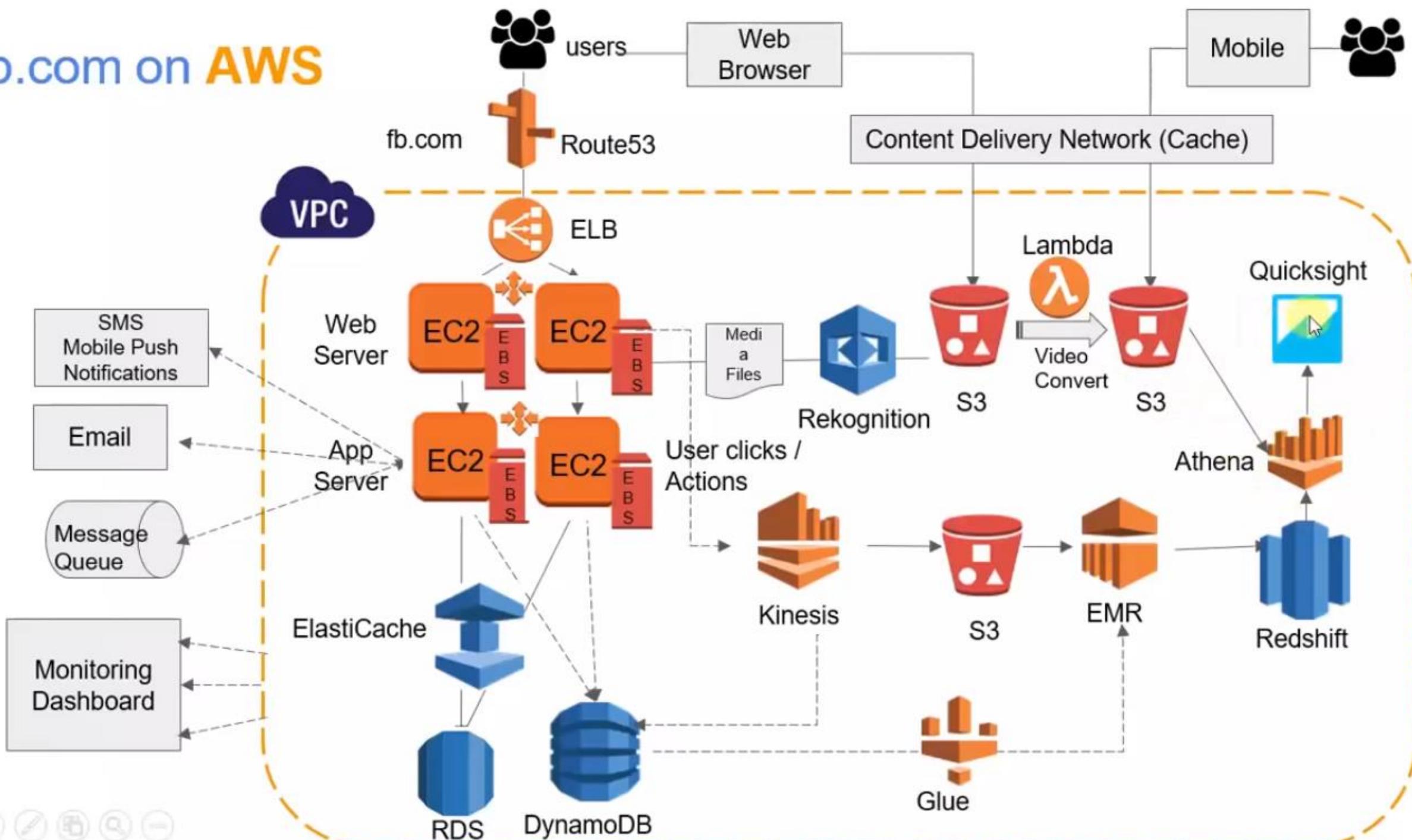
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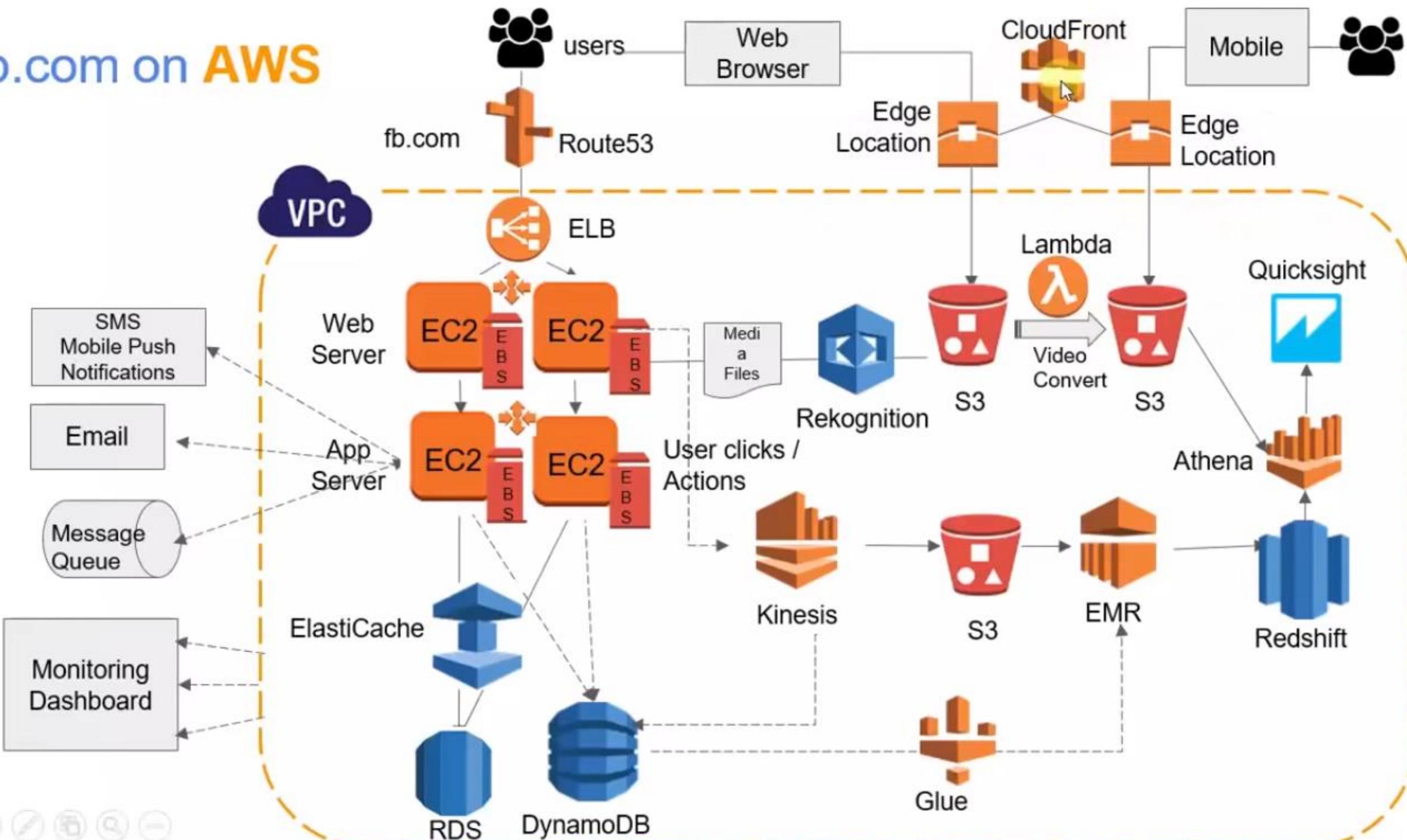
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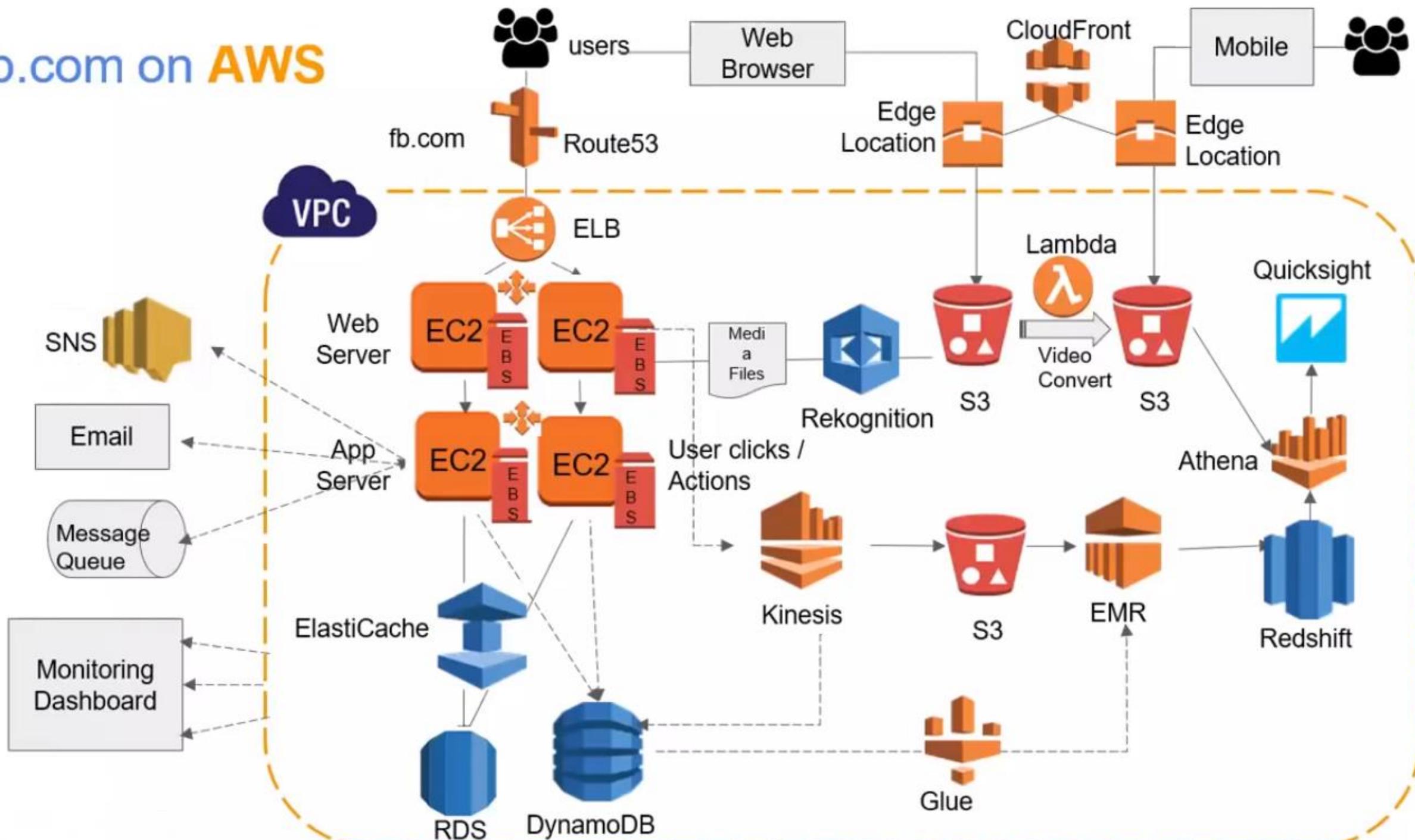
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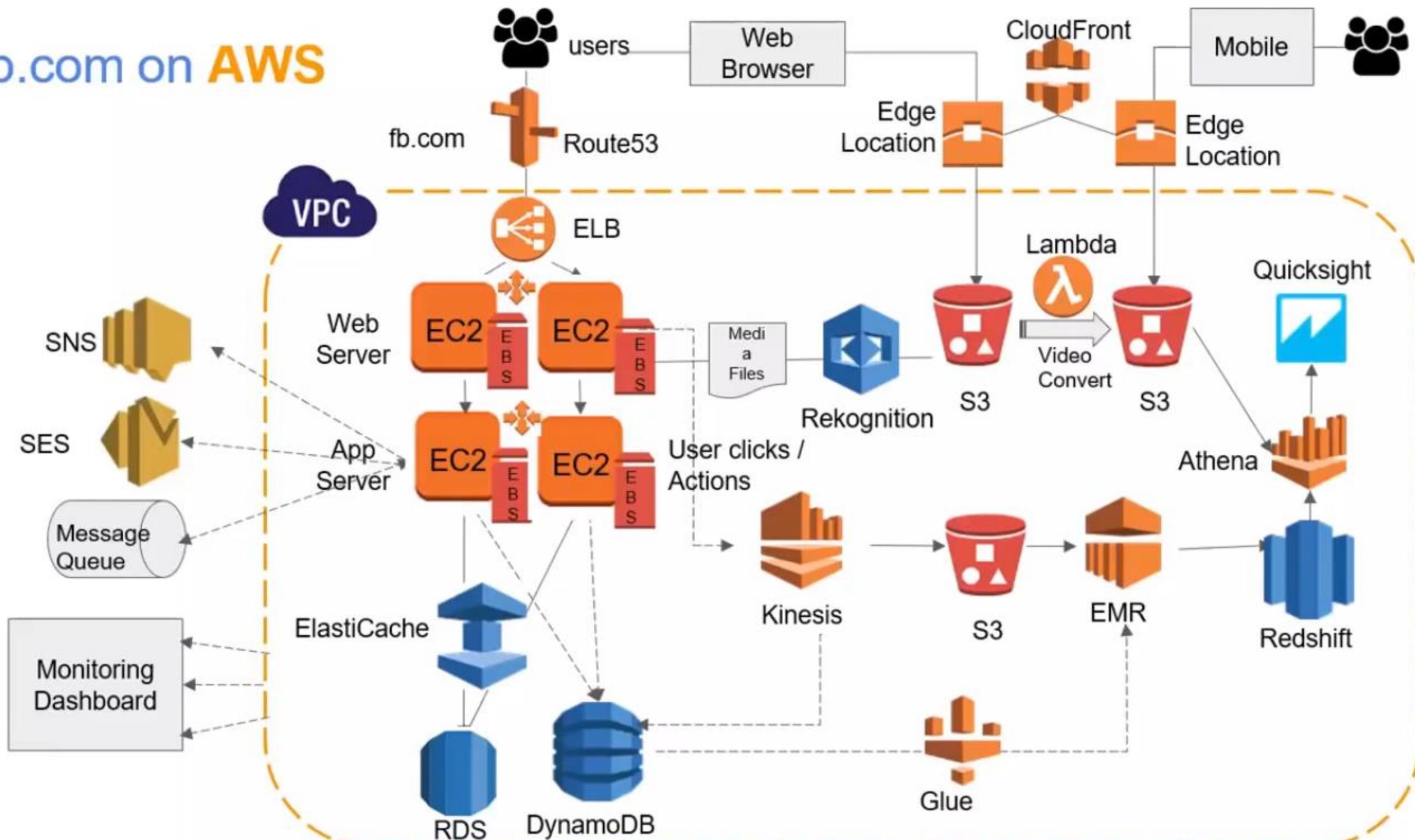
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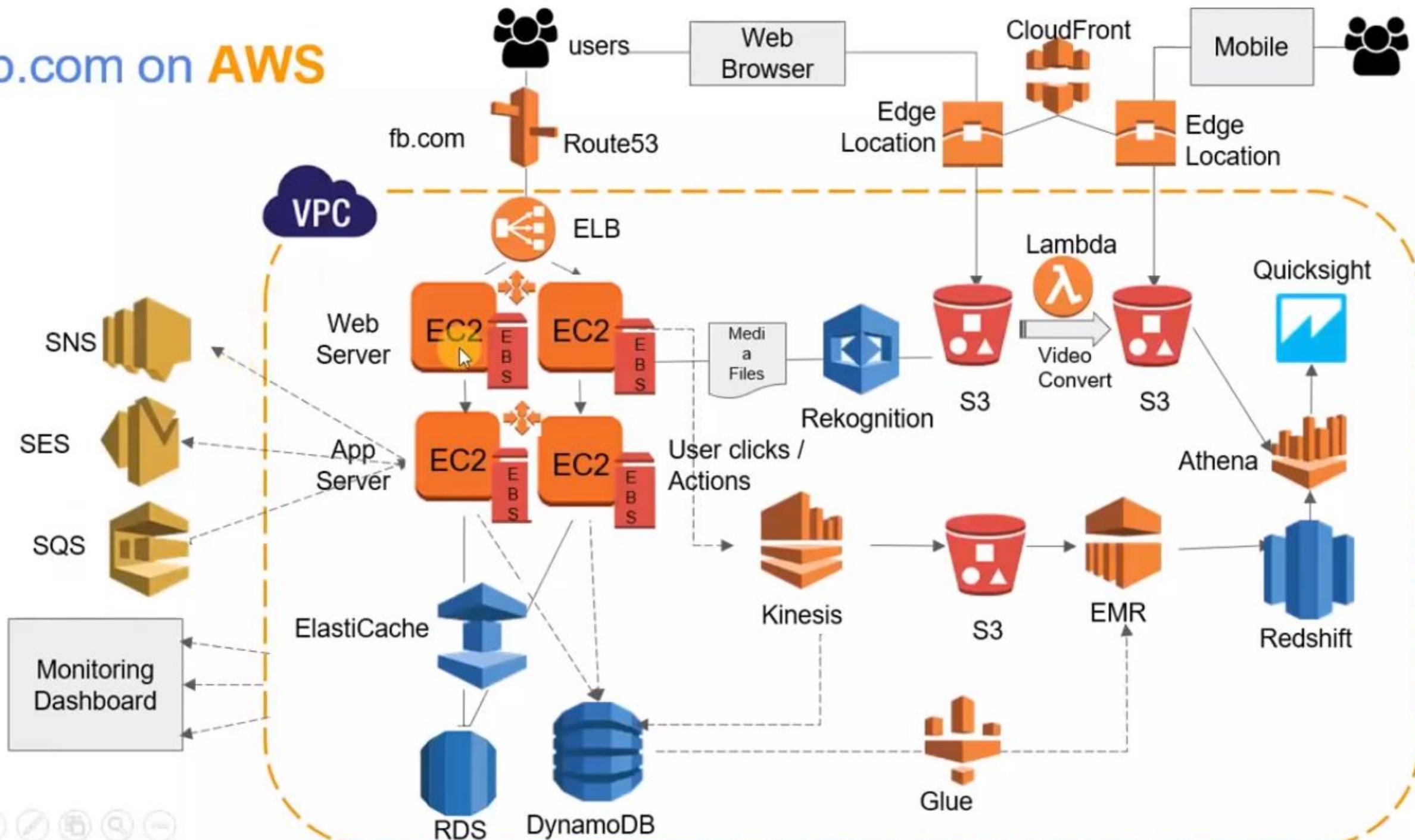
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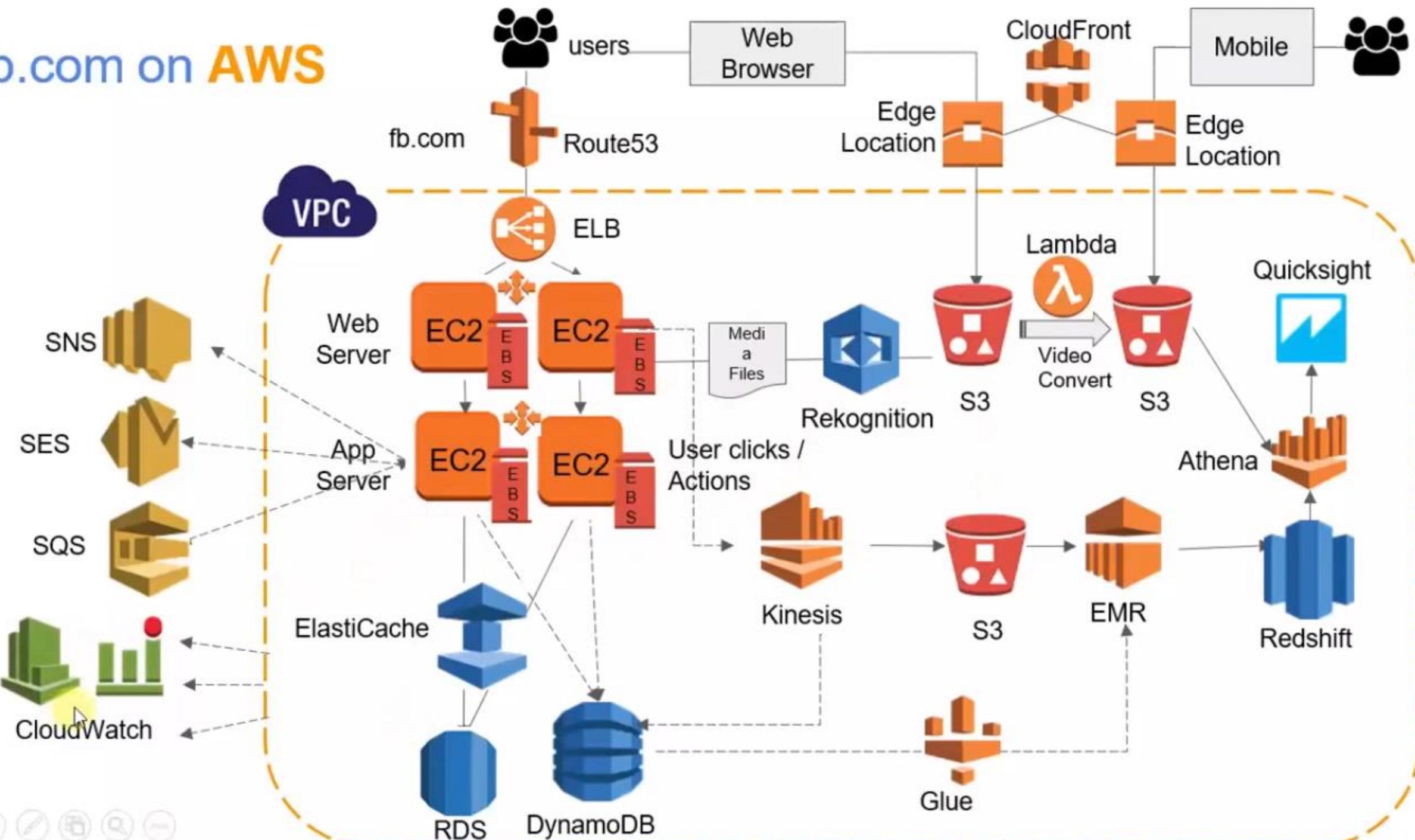
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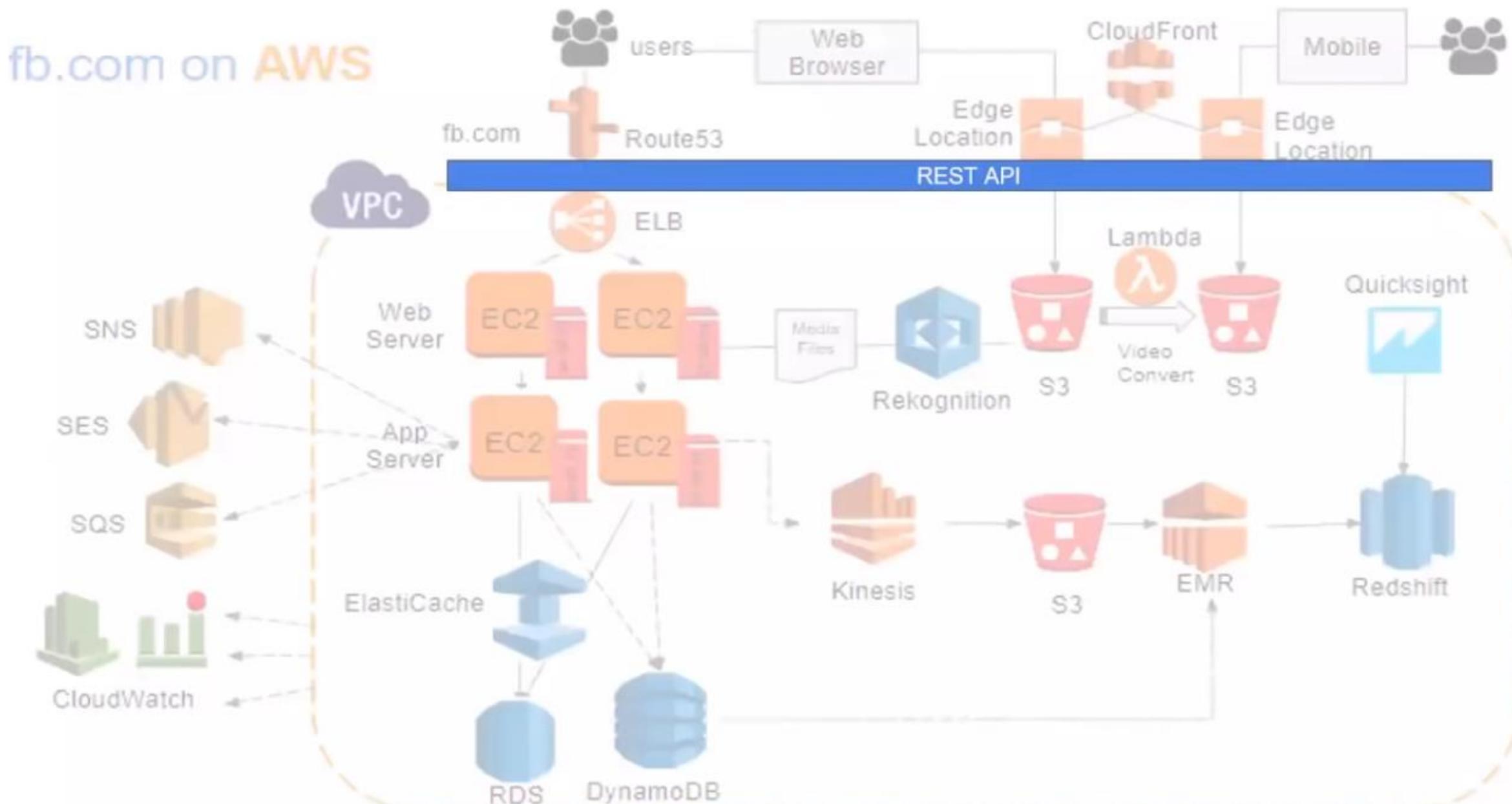
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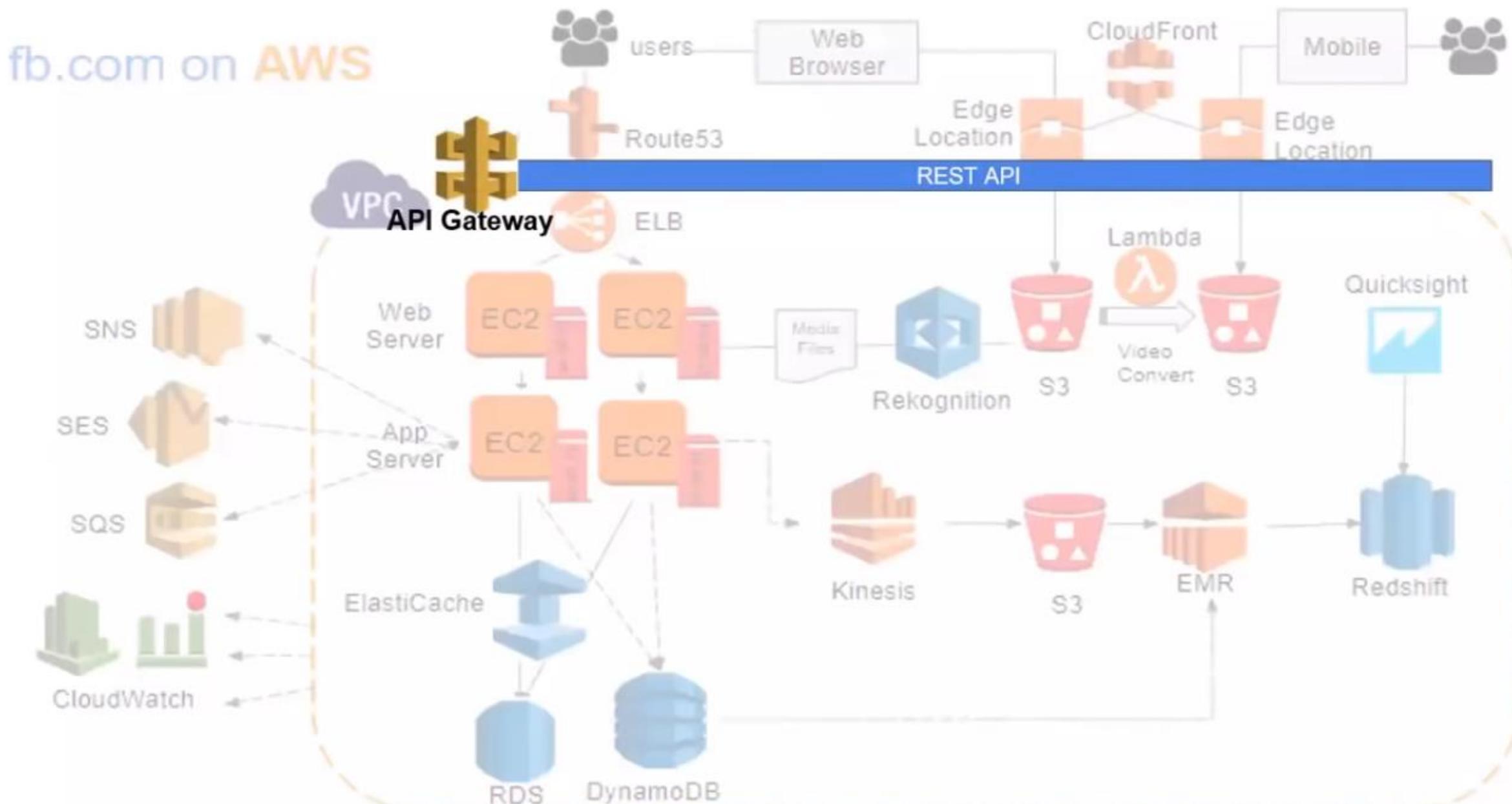
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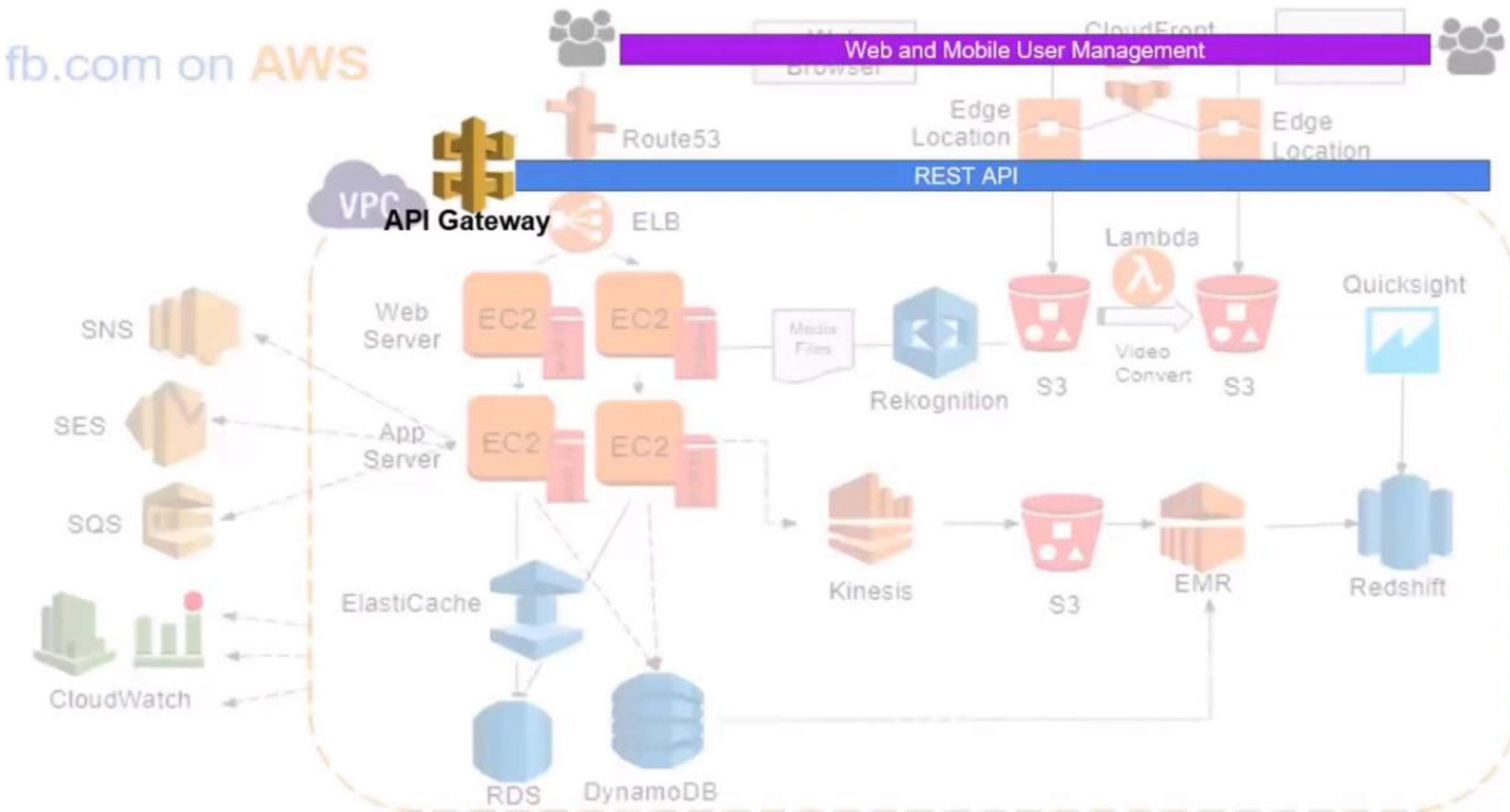
AWS Application Services



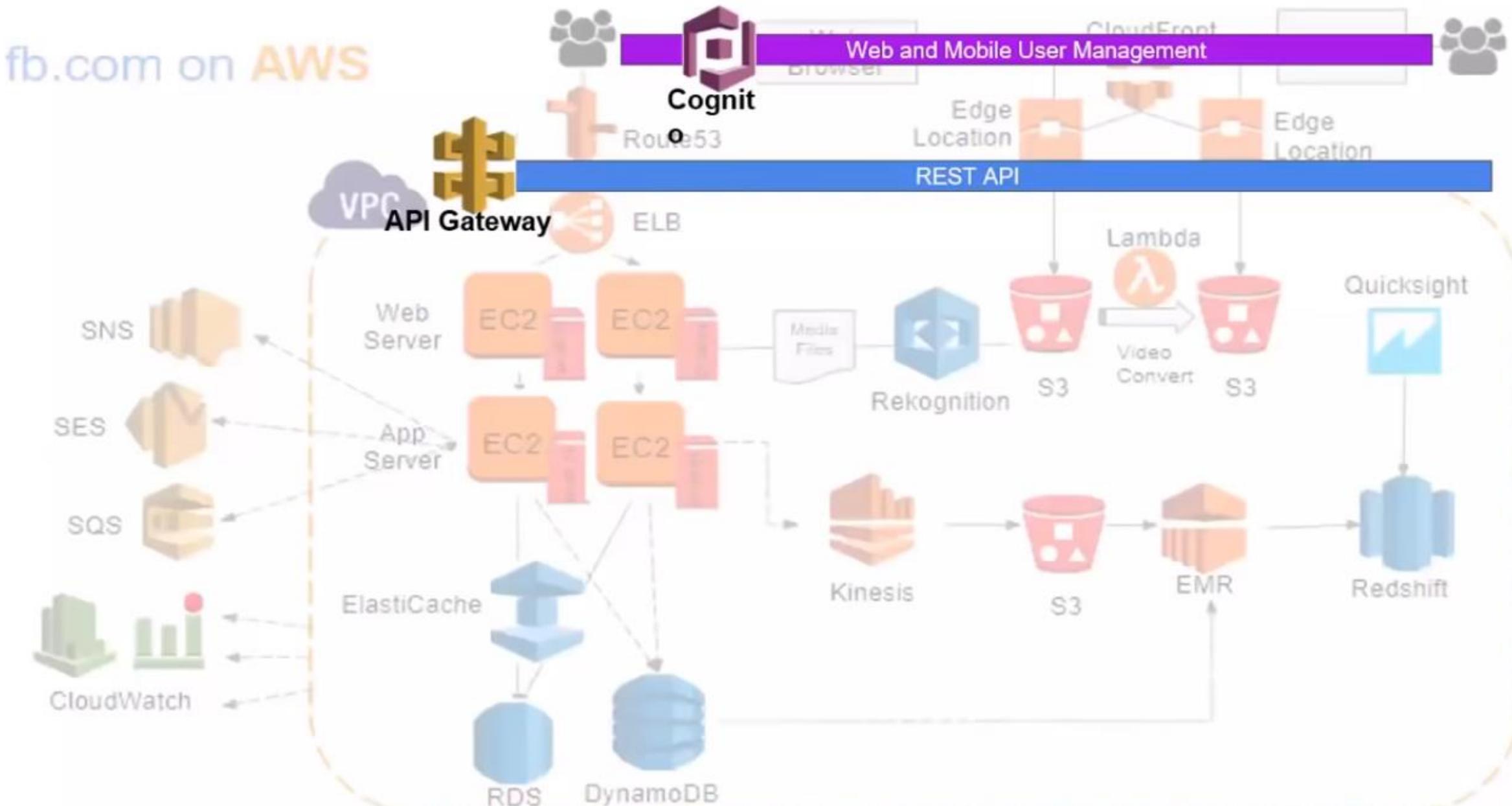
AWS Application Services



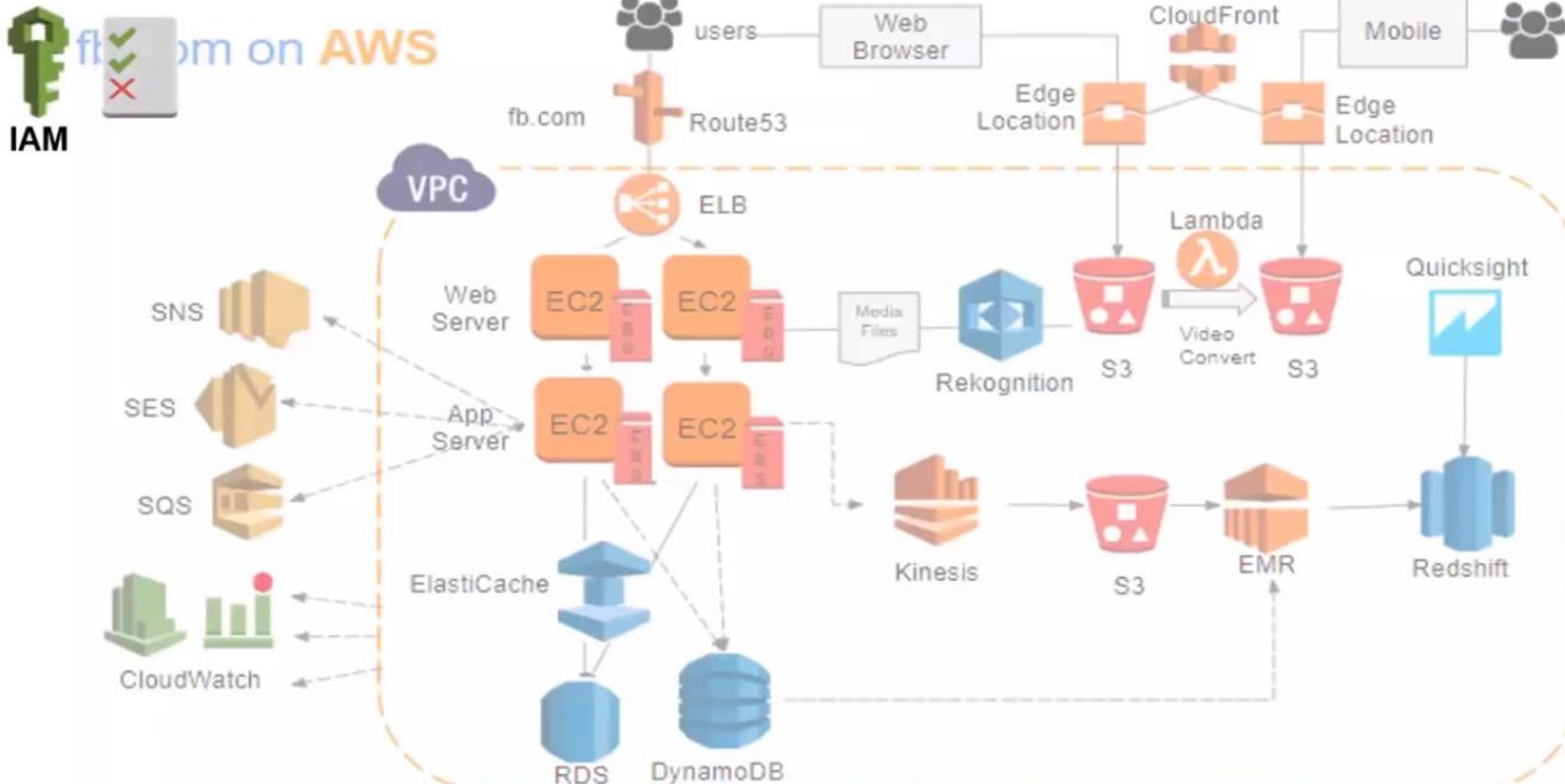
AWS Application Services



AWS Application Services

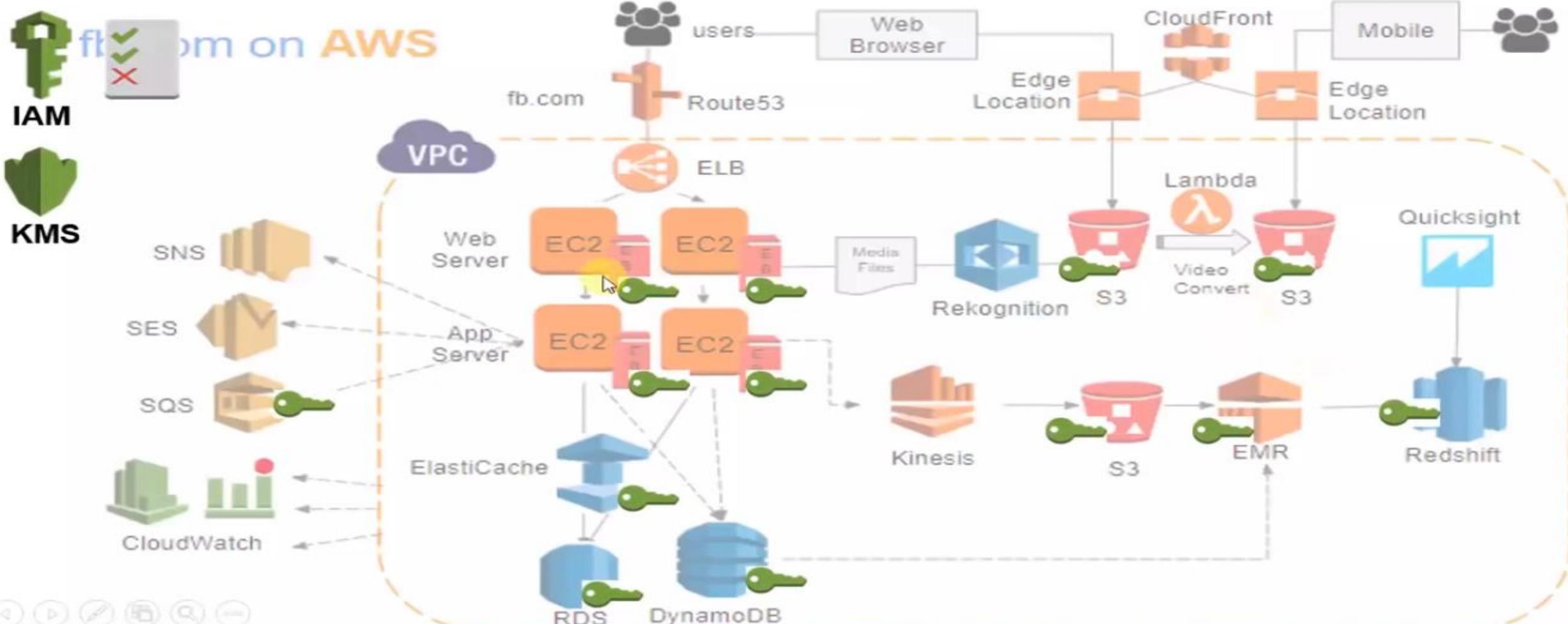


AWS Security Services



Encrypt data using KMS

AWS Security Services



AWS Security Services



IAM



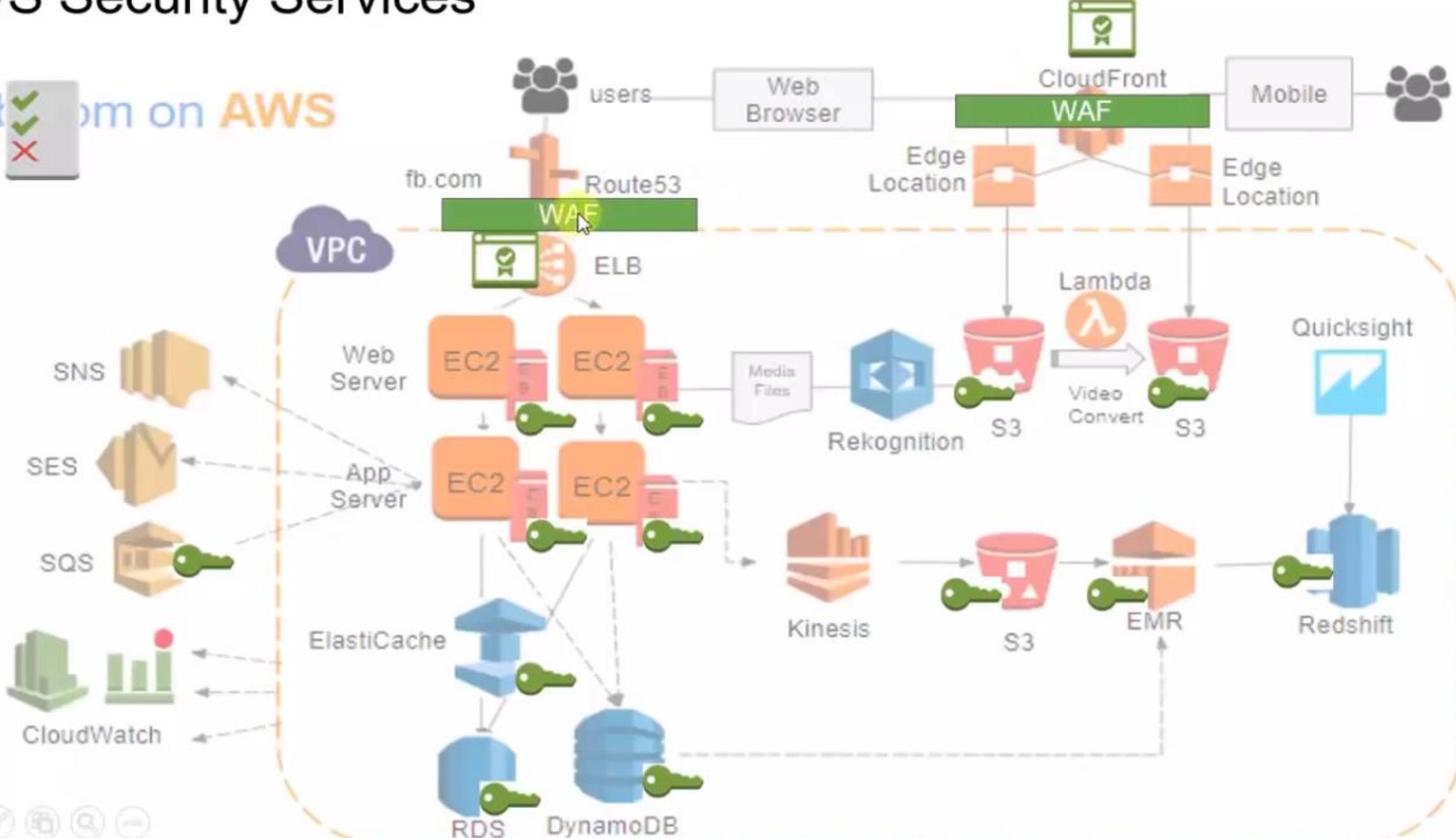
KMS



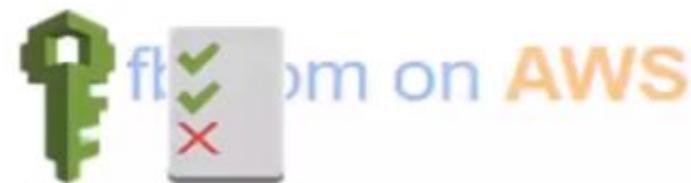
ACM



WAF



AWS Security Services



IAM



KMS



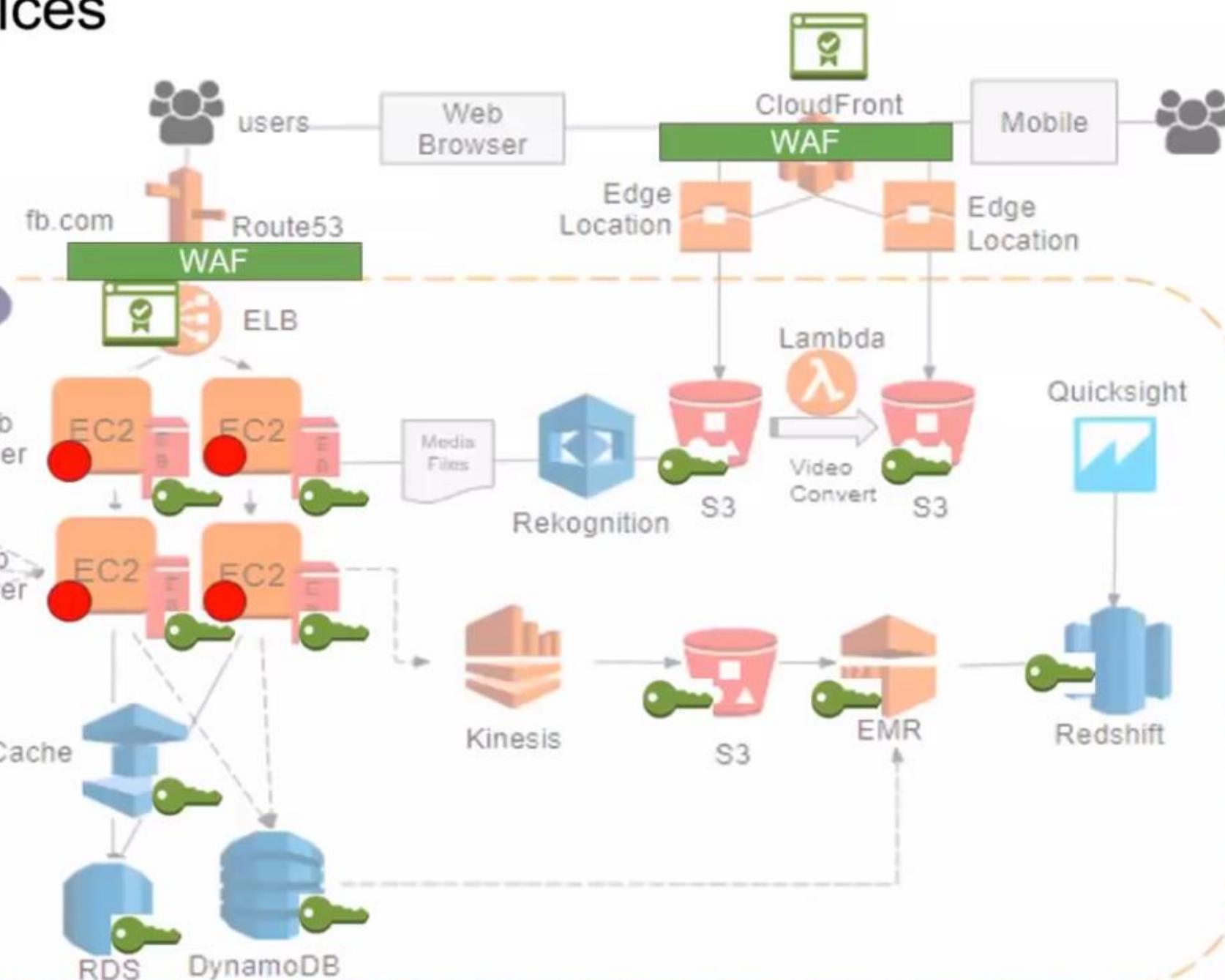
ACM



WAF

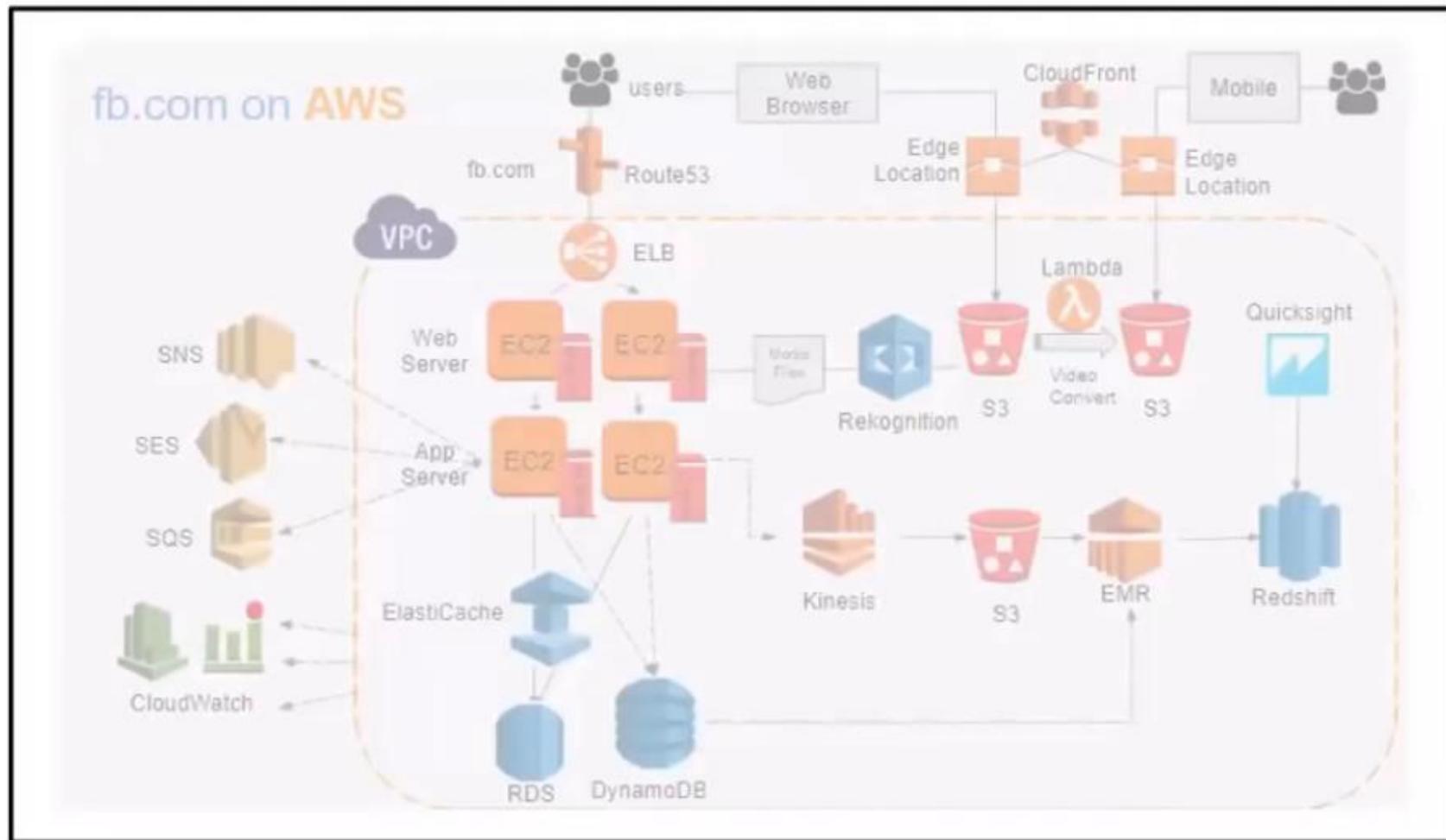


Inspector



AWS Development and DevOps Services

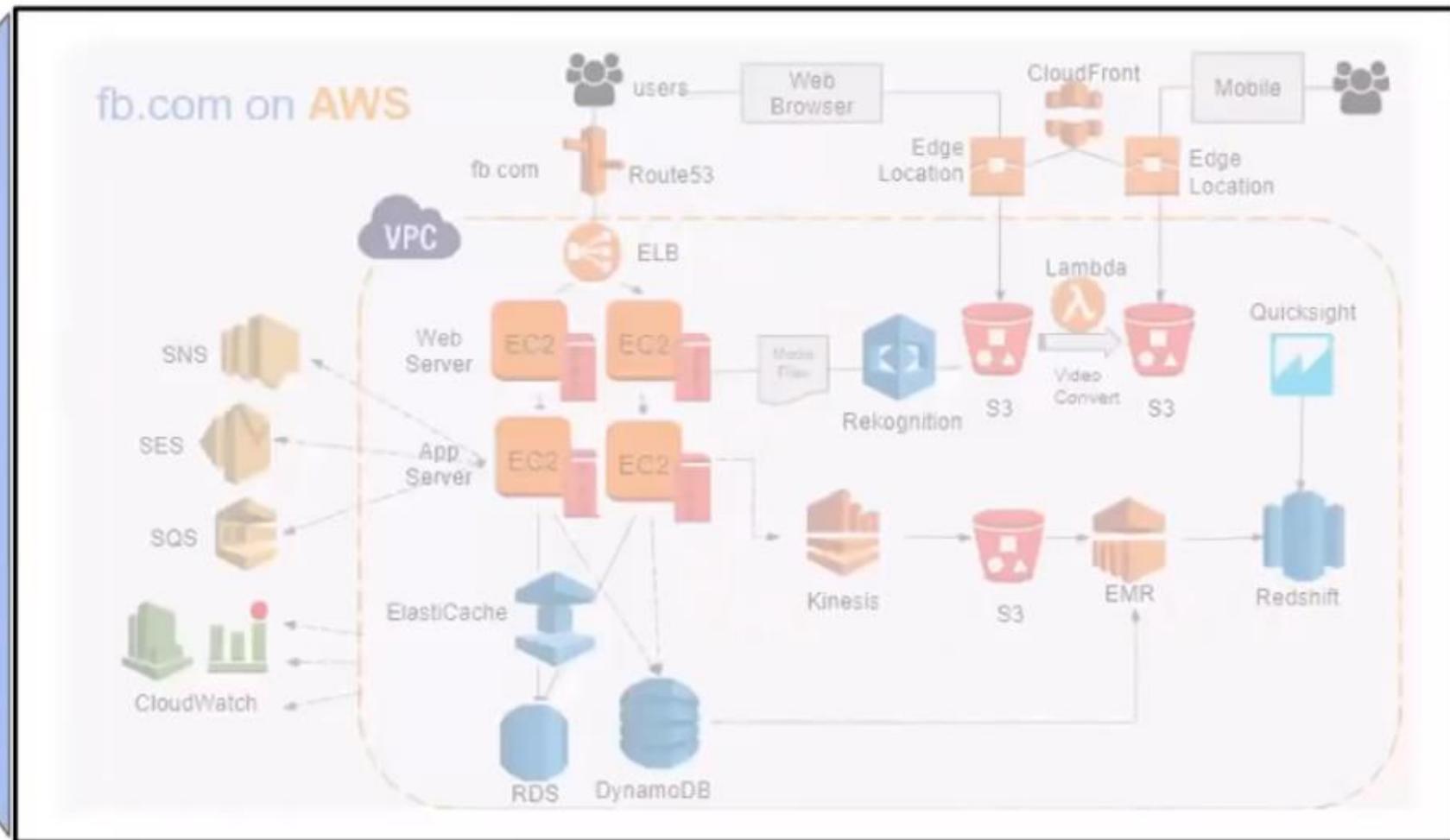
AWS Region



AWS Development and DevOps Services

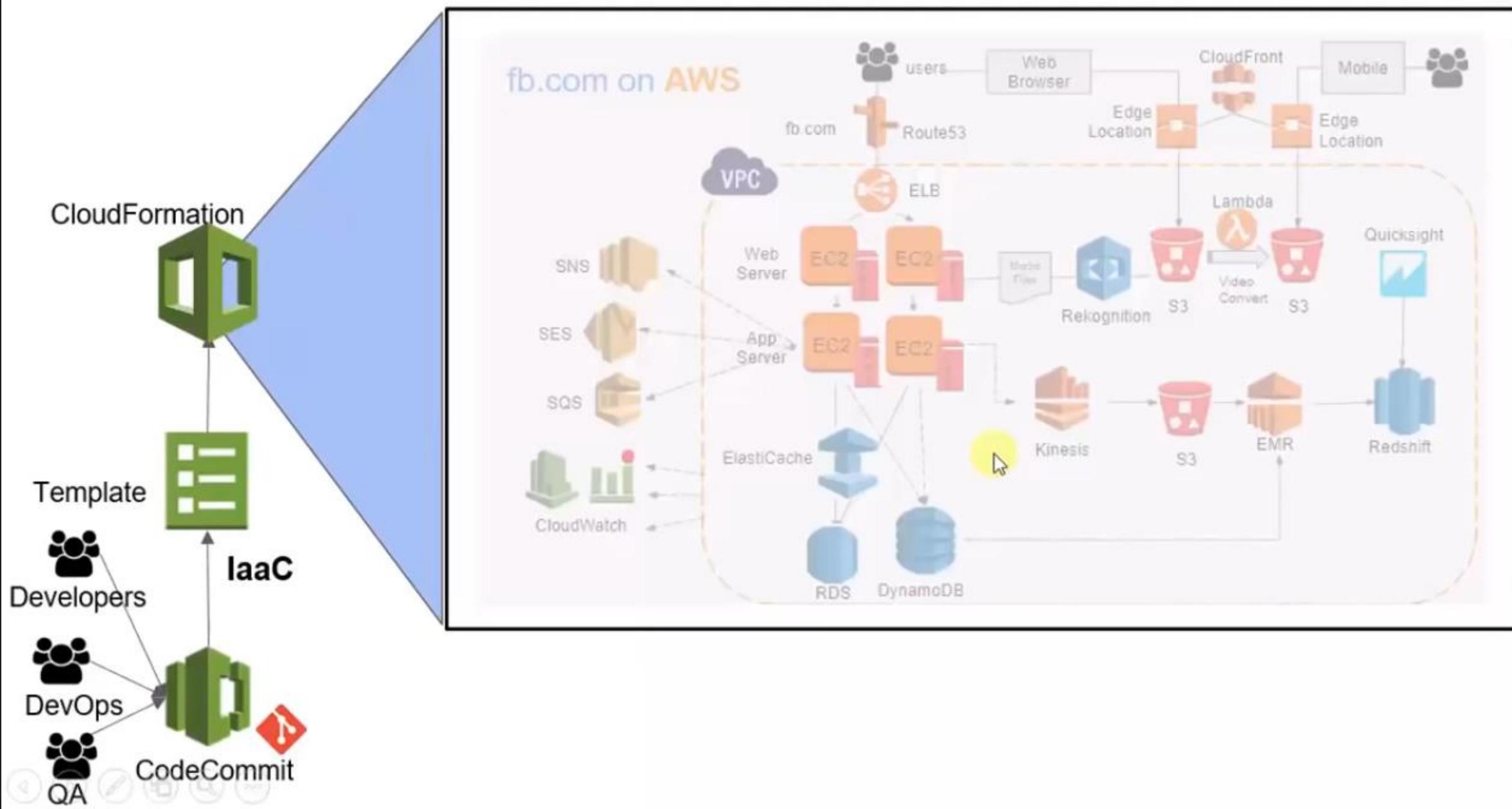
AWS Region

CloudFormation



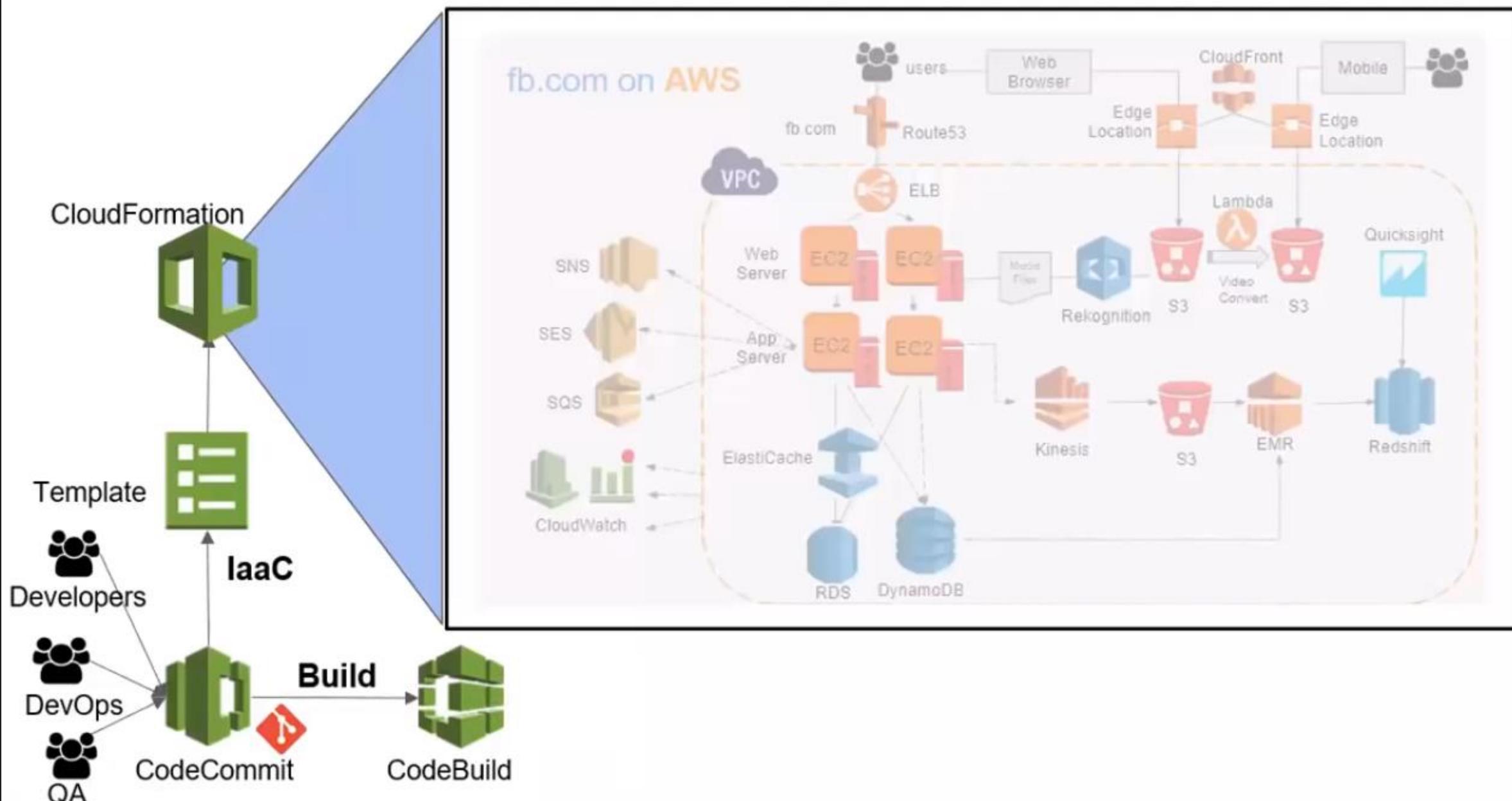
AWS Development and DevOps Services

AWS Region



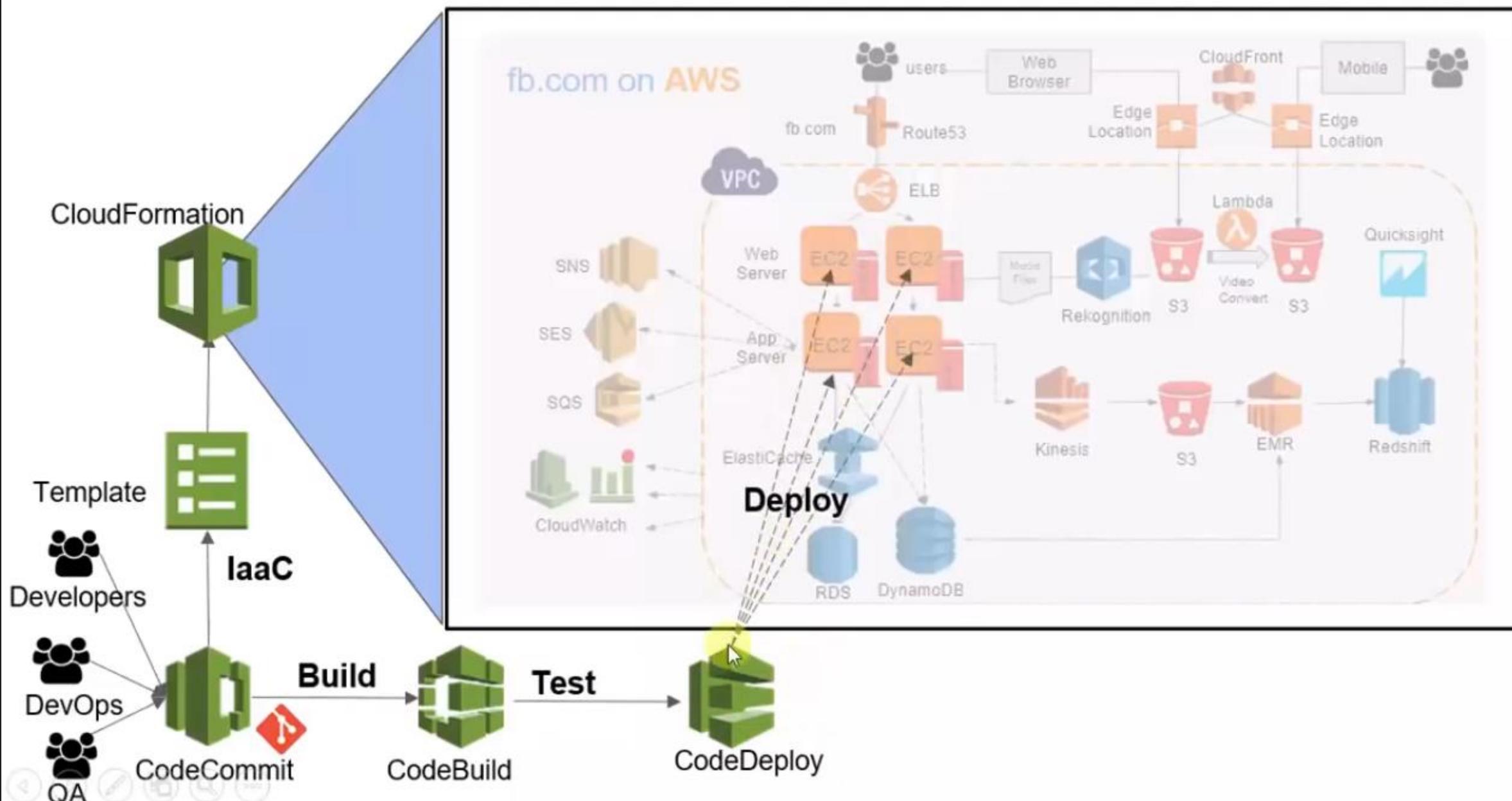
AWS Development and DevOps Services

AWS Region



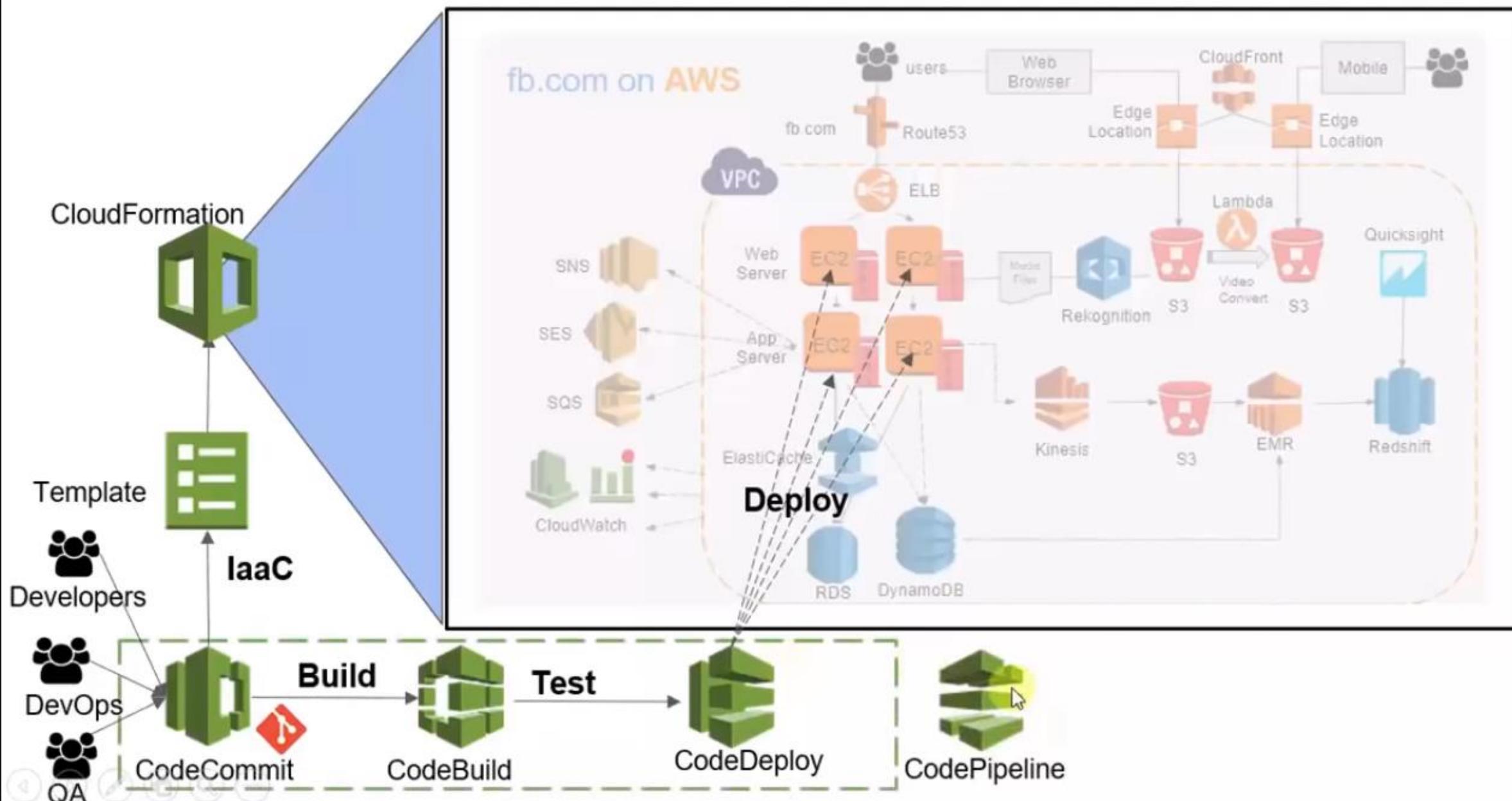
AWS Development and DevOps Services

AWS Region



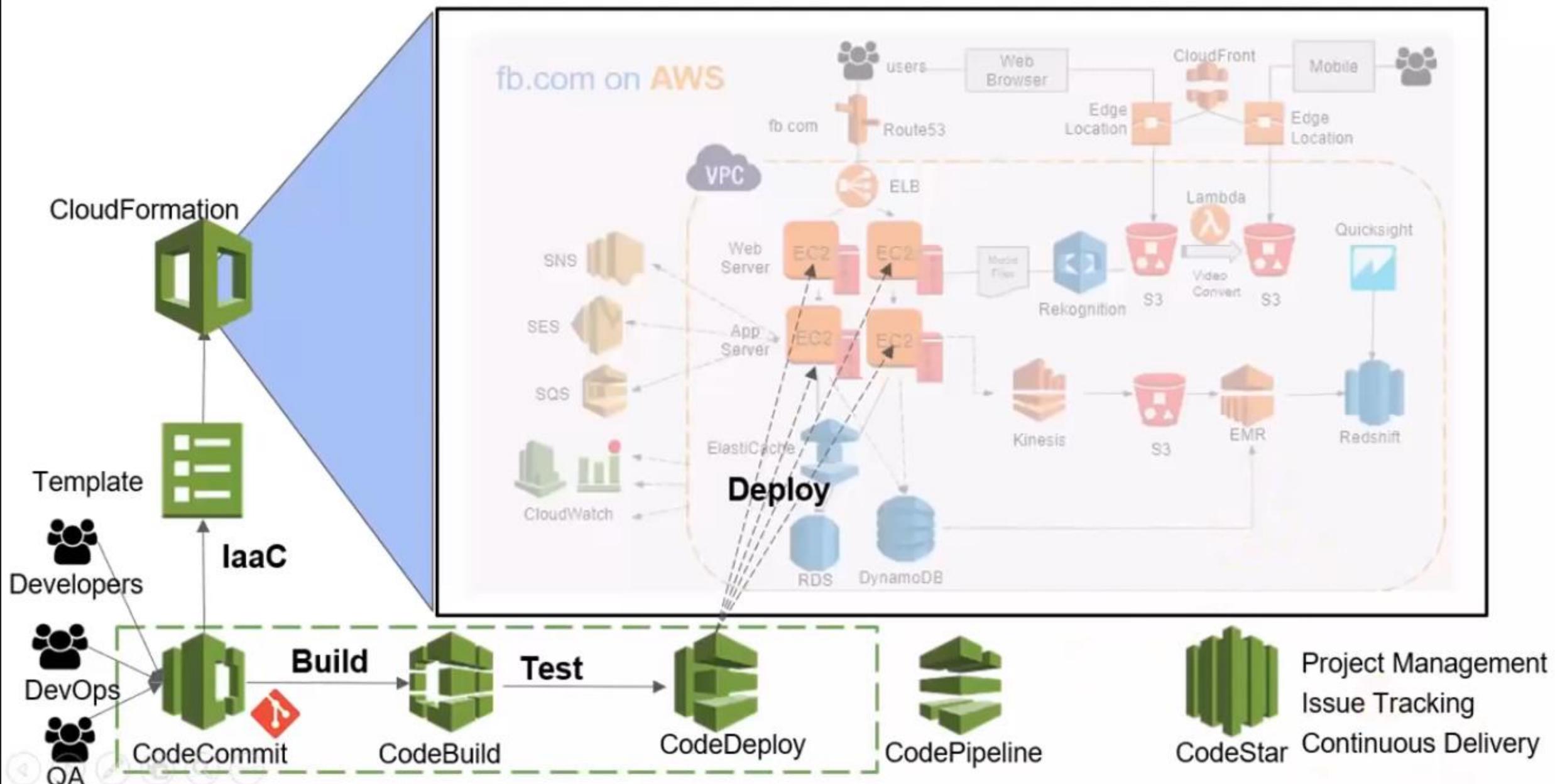
AWS Development and DevOps Services

AWS Region



AWS Development and DevOps Services

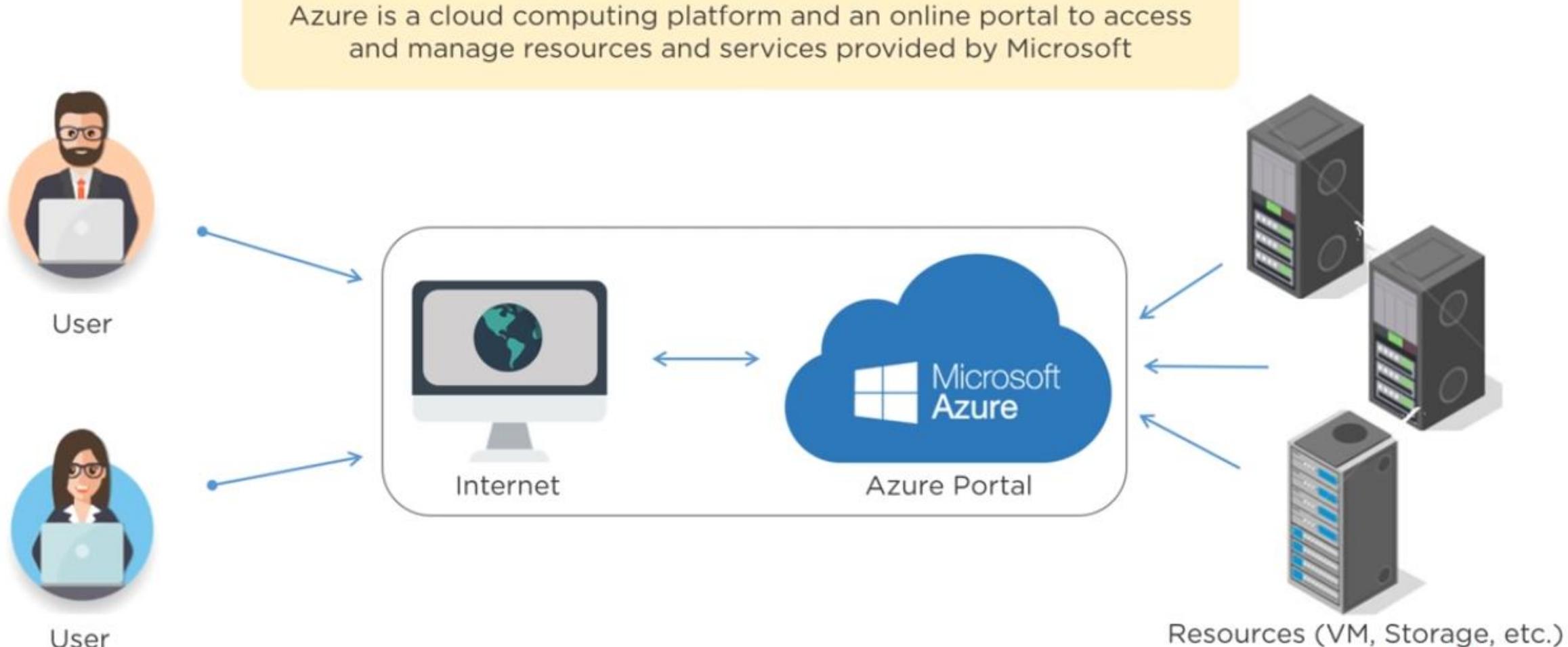
AWS Region



Azure

- Edit Master text styles
 - Second level
 - Third level
 - Fourth level
 - Fifth level

What is Azure?



What is Azure?



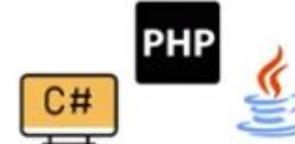
Free to start and
also provides pay-
per-use model



80% of fortune 500
companies use
Azure services



Launched on
February 1st, 2010



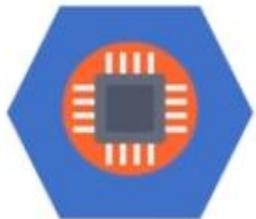
Supports multiple
programming languages
like C#, Node.Js, Java
etc.



Datacenters in 42
regions around
the world

Azure Services

Azure services are divided into 18 categories and contains more than 200 services



Compute



Networking



Storage



IoT



Migration



Mobile



Analytics



Containers



AI + Machine Learning



Integration



Management Tools



Developer Tools



Security



Databases



DevOps



Media

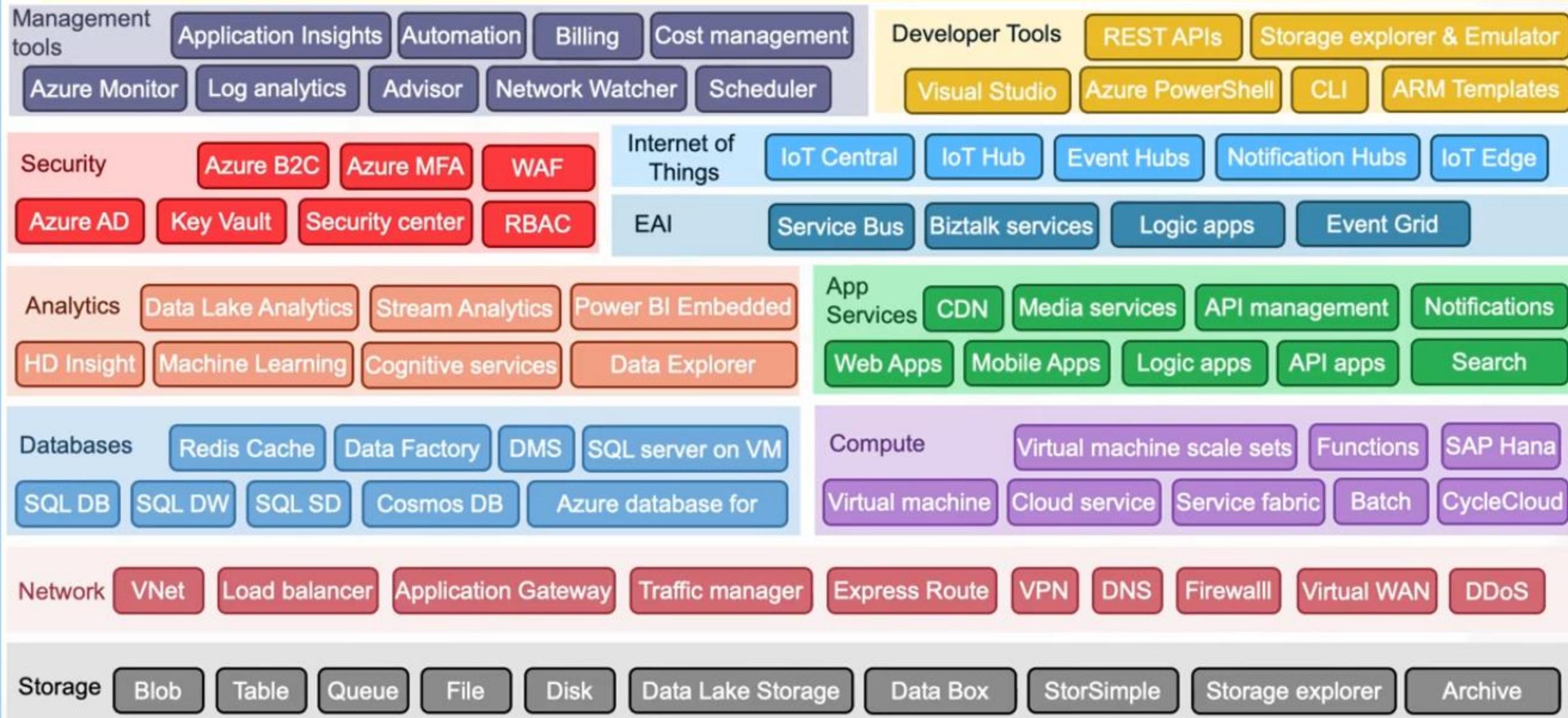


Identity

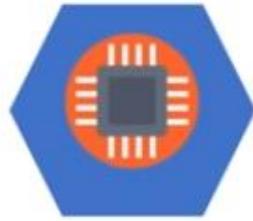


Web

10,000 feet view of Azure services



Azure Services - Compute



Compute



Virtual Machine



Cloud service



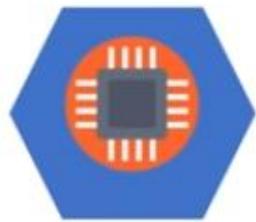
Service Fabric



Functions

Create windows or linux virtual machines of any configuration in a matter of seconds

Azure Services - Compute



Compute



Virtual Machine



Cloud service



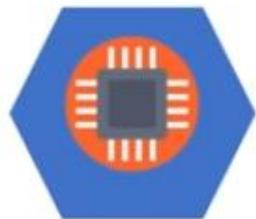
Service Fabric



Functions

Users can create scalable applications within the cloud using the virtual machines whose provisioning, load balancing and health monitoring are handled by Azure post-deployment

Azure Services - Compute



Compute



Virtual Machine



Cloud service



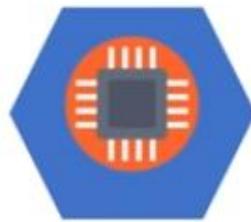
Service Fabric



Functions

Service Fabric simplifies
microservice development and
application lifecycle
management

Azure Services - Compute



Compute



Virtual Machine



Cloud service



Service Fabric



Functions

Easily build applications using serverless functions in any programming language of the user's choice

Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Azure CDN services are used for delivering high bandwidth content to users worldwide

Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Express route lets on-premise networks into Microsoft cloud through a private connection

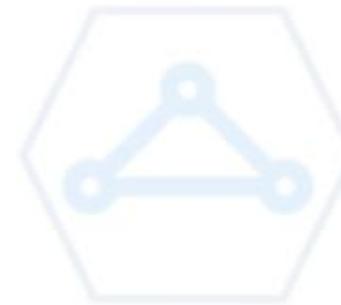
Azure Services - Networking



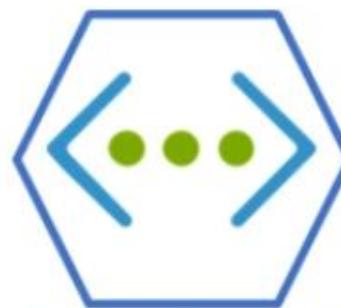
Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Virtual Network enables
Azure resources to
securely communicate
with each other

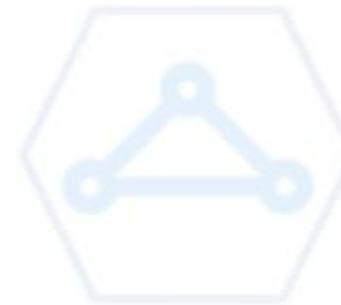
Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Azure DNS is a hosting service that allows the user to host their DNS domains in Azure

Azure network



Virtual network – Azure Virtual Network is a representation of customer own network in the cloud where customer can fully control IP address blocks, DNS settings, security policies, and route tables within this network.



Load balancer – Azure Load Balancer is a layer 4 (TCP, UDP) load balancer that distributes the incoming traffic among the healthy instances of services defined in load-balanced set. It can be internet facing or internal load balancing.



Application Gateway – It is an Application Delivery Controller providing many layer 7 load balancing capabilities. It accepts traffic and based on rules that are defined with it, routes the traffic to the appropriate back-end instances

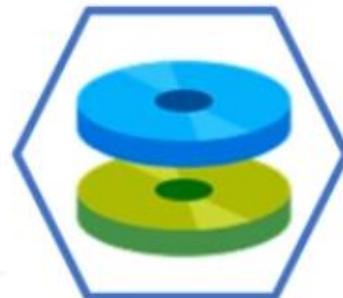


Traffic manager – Azure Traffic Manager allows you to control distribution of user traffic for service end points in different data centers. Traffic Manager uses the Domain Name System to direct client requests to the most appropriate end point based on the traffic-routing method and health of end points.

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



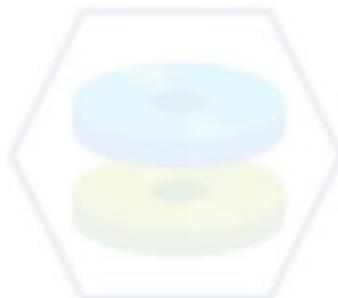
Queue Storage

Provides cost-effective
HDD/ SSD options
which can be used with
Azure Virtual Machines

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



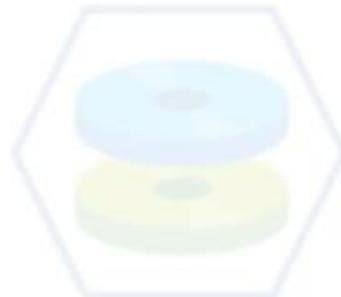
Queue Storage

Blob storage is optimized for storing massive amounts of unstructured data, such as text or binary data

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



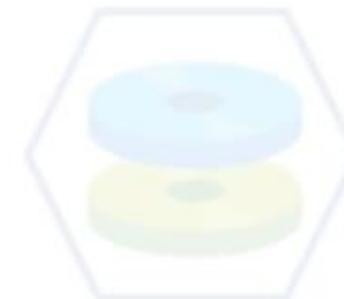
Queue Storage

Managed file storage in the cloud that are accessible via industry standard server message block (SMB) protocol

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



Queue Storage

Queue storage provides durable message queuing for large workloads and can be accessed from anywhere in the world



Azure Storage services



Blob – Azure blob storage is a service that provides ability to store unstructured data into the cloud as objects/blobs. A blob can be a document, media file or application installer. Blob storage also called as object storage



File – Azure file storage is a service that offer shared file storage in the cloud using standard Server Message Block (SMB) Protocol. With this, you can migrate legacy applications that rely on file shares quickly and without costly rewrites.



Queue – Azure queue storage provides cloud messaging between application components. It enables application decoupling and asynchronous communication of messages



Tables – Azure table storage enables you to store structured NoSQL data in the cloud. It is key/attribute store with a schemaless design. Table storage offer much cheaper storage than traditional SQL.

Azure Storage services



Data Lake Store – Azure data lake store is a hyper-scale repository for big data analytic workloads. It is build for large scale analytic systems that require massive throughput to query and analyze large amounts of data.



StorSimple – StorSimple addresses massive data growth by taking advantage of economical cloud storage for inactive data, while keeping your mission critical data on-premises for high level performance. It provide automated archive and cost effective backup solution.



Backup – Azure Backup can be used to backup and restore your data in the cloud. It can replace you on-premise backup solution with a cloud-based solution that is reliable, secure and cost-effective.

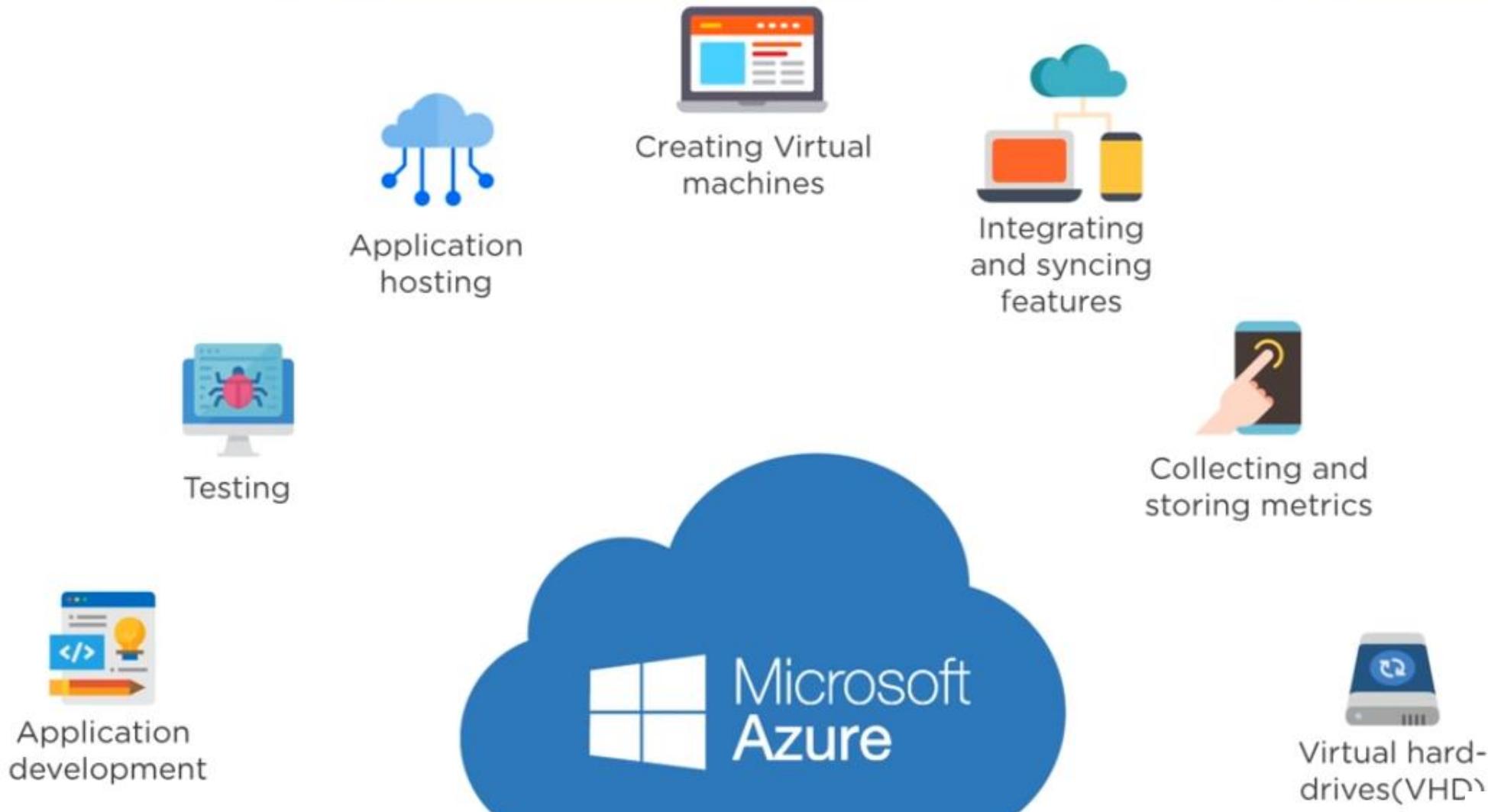


Site Recovery – Azure Site Recovery orchestrates replication of workloads running on-premises physical servers and virtual machines from a primary datacentre to the cloud or to a secondary datacentre. It enables you to take application consistent snapshots and achieve near synchronous replication

Azure Storage services

Import/Export – Azure Import/Export allows you to securely transfer large amounts of data to Azure blob storage by shipping hard disks to an Azure data center. This service is useful in situation where large amount of data in TB's needs to be migrated in and out of the cloud.

Uses of Azure



Amazon EMR

- Amazon EMR cluster provides a managed Hadoop framework that makes it easy, fast, and cost-effective to process vast amounts of data across dynamically scalable Amazon EC2 instances.

Amazon EMR

- Amazon EMR cluster provides a managed Hadoop framework that makes it easy, fast, and cost-effective to process vast amounts of data across dynamically scalable Amazon EC2 instances.
- We can also run other popular distributed frameworks such as Apache Spark and HBase in Amazon EMR, and interact with data in other AWS data stores such as Amazon S3 and Amazon DynamoDB.

S3(Amazon Simple Storage Service)

- We are going run our Spark application on top of the Hadoop cluster, and we will put the input data source into the S3.
- S3 is a distributed storage system and AWS's equivalent to HDFS.
- We want to make sure that
 - Our date is coming from some distributed File system that can be accessed by every node on our Spark cluster.
 - Our Spark application doesn't assume that our input data sits somewhere on our local disk because that will not scale.
- By saving our input data source into S3, each spark node deployed on the EMR cluster can read the input data source from S3.

AWS is NOT free

- AWS charges by how much time and how many machines are running with given type, any storage space, etc.

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