AWS Cloud Practitioner - 2

Compute, storage and networking

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Lambda - Overview

- "Serverless" event processing
- Use either one of the supported languages, bring your own, or use a docker container
- Used in other services
  - e.g. Custom AWS Config rules
- Can run in VPC's
- Cold/warm starts

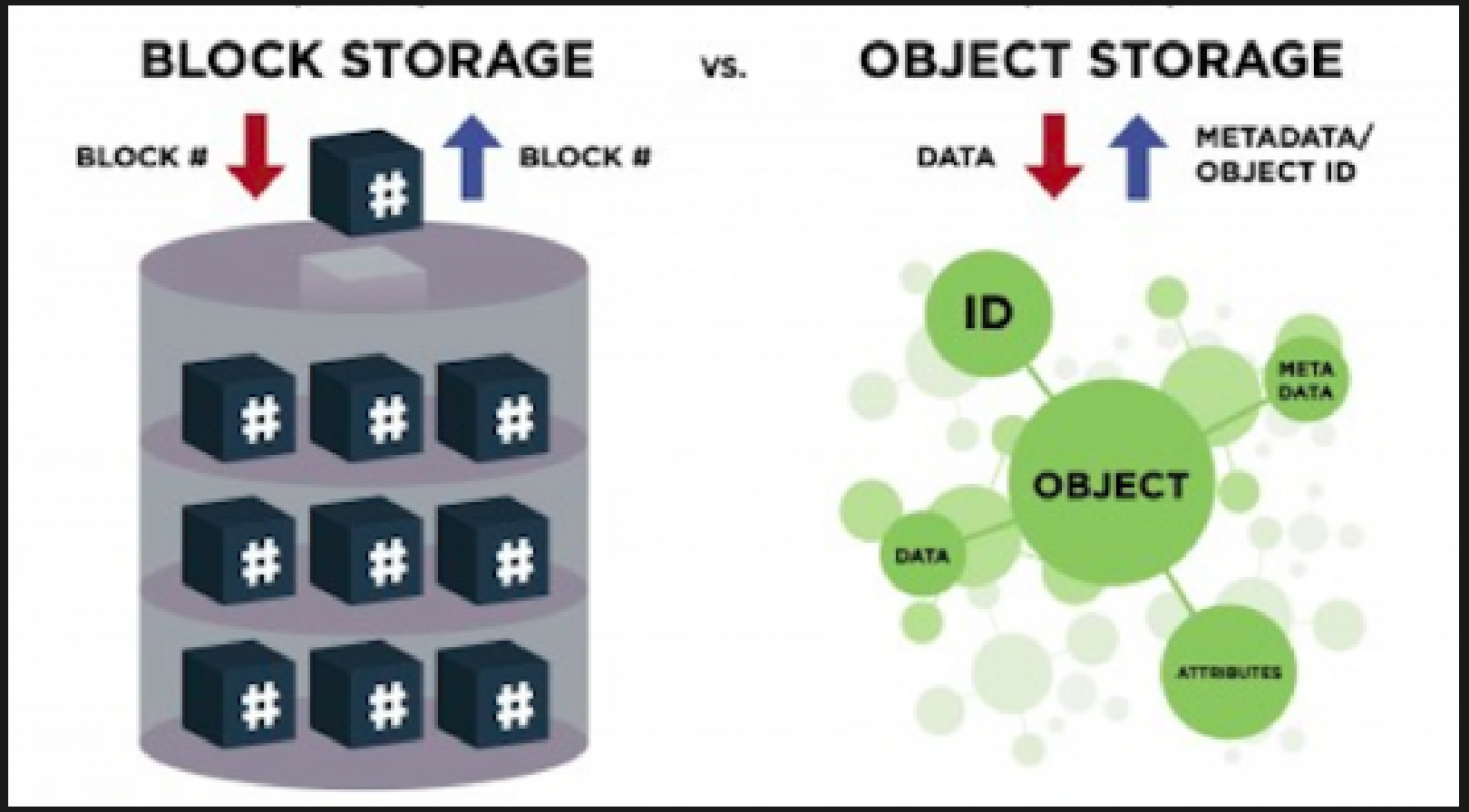
Lambda - P2

- Pricing per GB-month and invocation
- CPU is dependant on RAM
- 15 minute max runtime
- Uses an execution role for permissions
- Trigger from SNS/SQS/S3/Cloudwatch...

S3

- "malloc for the internet"
- Backs a host of AWS services
- Supports static site hosting
- Total size limited by your wallet
- 11 9's of durability (NOT Availability)
- Max 5TB object size

Object and block storage



Source: https://www.druva.com/blog/object-storage-versus-block-storage-understanding-technology-differences/

S3 Storage tiers

- Different tiers, different pricing models
- Standard is for stuff served regularly
- IA variants are for stuff you need within milliseconds, but not constantly
- Glacier variants are really for archiving

More S3 Features

- Routing Rules
- "Requester pays" supported
- Signed urls
- Bucket policies
- MFA Delete
- Versioning
- Replication
- Lifecycle policies

Cloudfront and acceleration

- CloudFront is AWS' CDN
- Usually what you put in front of an s3 bucket
- Can serve multiple origins, and supports OAI/OAC
- Global Accelerator gives you fixed ips that act as an entrypoint into the AWS Backbone
- Transfer acceleration is basically GA for S3

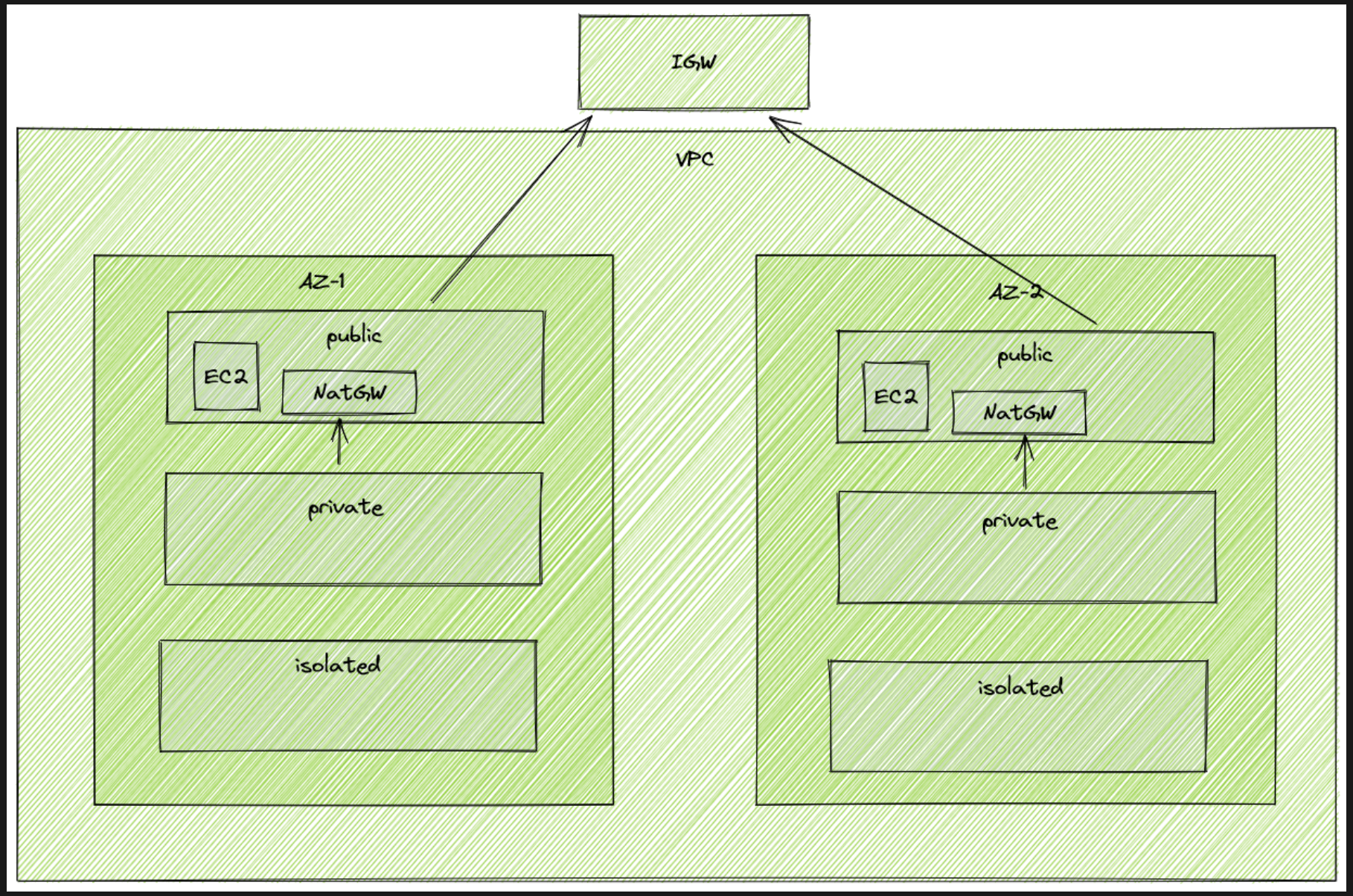
EC2

- VMs in AWS
- Always run in a VPC
- Back a bunch of other AWS services (ECS/EKS/RDS/ElastiCache...)
- Run AMIs
- Instance families for different use-cases
- There's a marketplace for AMIs
- Spot for temp/interruptable workloads
- Reserved for constant usage over years

EC2 Adjacent services

- Autoscaling
  - CPU/Memory load
  - Schedule
  - Anything with a lambda
- Autoscaling supports multiple placement types depending on usage
- Network throughput depends on size and instance type
- Instance connect

VPC


IGW
VPC
AZ-1
public
EC2
NatGW
private
isolated
AZ-2
public
EC2
NatGW
private
isolated

ClDR Notation - 10.2.0.0/16

Classless Inter-Domain Routing notation

- An Ipv4 is 4x8 bits
  - 10.2.33.5
  - 00001010.00000010.0010001.11111110
- The /something denotes the number of bits from the left that are set/static
- /16 has 254 /24 blocks

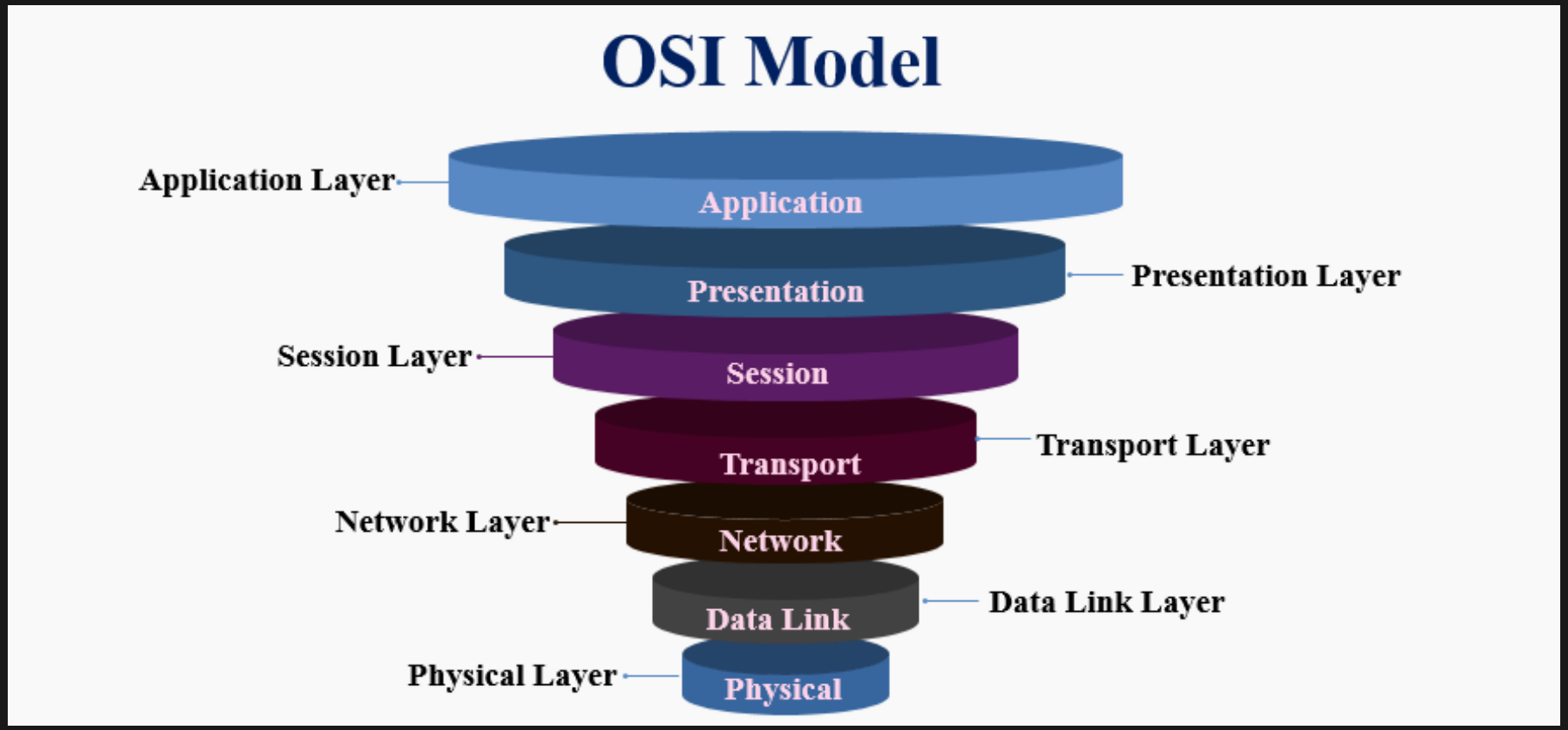
VPC Usage

- Main CIDR block subdivided into N subnets
- A subnet is part of a single AZ
- Security groups are stateful "firewall" rules
- Being in the same secgroup doesn't imply everything can access each other
- NACLs are stateless and on network level
- A Route table tells the traffic where to go. Defined per subnet

Load balancing

- Application load balancer, Layer 7. Supports path routing and SSL certs
- NLB, Layer 4 routing. More performant, supports TCP/UDP connections
- Load balancer points to target group, target group points to targets
- Supports health checking

OSI Model


OSI Model
Application Layer
Application
Presentation
Presentation Layer
Session Layer
Session
Transport
Transport Layer
Network Layer
Network
Data Link
Data Link Layer
Physical Layer
Physical

Storage - EBS

- EBS - Elastic block storage
  - Essentially a harddrive/SSD plugged into a VM
  - Storage and IOPS are the two important metrics
- Instance store. Storage physically attached to the host of your VM
  - EPHEMERAL
  - Data removed when: Storage device fails, instance stops/hibernates/terminates

Storage - Others

- EFS - Elastic file storage
  - NAS for your AWS services
  - Throughput scales with stored files
- FSx
  - Various flavors, high performance distributed file systems

Storage gateway

- Storage gateways
  - Proxy between AWS and on prem
  - Can cache locally, uses S3 in the backend
- File gatway
  - Pretends to be a network share
- Volume gateway
  - Pretends to be a block device
- Tape gateway
  - Pretends to be a tape device

Backups

- AWS Backup
  - One stop shop for aws backups
  - DynamoDB/EBS/S3/Etc
- EBS Snapshots

Questions?