Hello, Cloud Gurus,

and welcome to this lecture, which is a summary

of the EC2 section, including all of my exam tips.

So EC2 is like a virtual machine,

which is hosted in AWS instead of your own data center.

You can select the capacity that you need right now,

grow and shrink when you need,

pay only for what you use

and wait minutes, not months, so you can be up

and running in just a few minutes rather

than waiting months as you would

if you were installing a server in your own data center.

When it comes to pricing, there are 4

different pricing options to be aware of.

So we've got On-Demand.

And this is where you pay by the hour

or second, depending on the type of instance you run.

And this is great for flexibility.

We've also got Reserved instances,

which allows you to reserve capacity

for 1 or 3 years with up to a 72% discount

on the hourly charge.

And this is great if you have known fixed requirements.

There's also spot instances, which allows you

to purchase unused capacity at a massive

discount of up to 90%.

Prices fluctuate with supply and demand,

but this is great for applications

with flexible start and end times

because as soon as the Spot price exceeds

the maximum you're willing to pay,

the instance will be terminated or stopped.

And finally we have Dedicated.

And this is where you have a physical EC2

server dedicated for your use.

And this is great if you have server bound licenses

that you want to reuse or compliance requirements,

which mean you cannot use multi-tenant hardware.

The instance type determines the hardware

of the host computer,

and each instance type offers different compute,

memory, and storage capabilities

and these are grouped in instance families.

And for the Developer Associate exam,

it is not necessary to memorize all

the different instance types.

Just be aware that you should select

an instance type based on the requirements

of your application.

On to EBS volumes.

And EBS volumes are highly available

and scalable storage volumes that

you can attach to an EC2 instance.

And if you remember, we launched an EC2 instance

and created an EBS volume,

and then we attached the EBS volume to our instance.

And there are a few different types of

EBS volumes to choose from.

And EBS of course stands for Elastic Block Store.

So there's gp2, which is suitable for boot disks

and general applications.

And there's also gp3, which is the latest generation of SSD.

And it's also suitable for boot disks

and general applications.

But the difference with this one is that

you get a baseline of 3000 IOPS for all volumes

no matter what their size,

and it is currently 20% cheaper than gp2

because they want to encourage everybody

to use the latest generation.

But both gp2 and gp3 are both limited

to 16,000 IOPS per volume.

So if your application requires greater

than 16,000 IOPS, then you should go for provisioned IOPS.

And with provisioned IOPS, we've got io1

and io2, and io2 is the latest generation.

And these are suitable for online transaction processing

and latency sensitive applications.

And you get up to 64,000 IOPS per volume.

And there's also io2 Block Express,

which is designed for the largest, most critical

and high-performance applications like SAP HANA, Oracle

and Microsoft SQL server, etc.,

with volume sizes of up to 64 terabytes

and 256,000 IOPS per volume.

And this really is SAN in the cloud performance.

And for HDD volumes or hard disk drives,

we've got st1, also known as Throughput Optimized HDD,

and these are all suitable for big data,

data warehouses, and extract transform load workloads.

The maximum throughput is 500 megs per second per volume.

And these cannot be used as a boot volume,

and you get up to 99.9% durability.

And there's also sc1.

And this is also known as Cold HDD.

You get a maximum Throughput of 250 megs per second

per volume, but suitable for less frequently access data.

They cannot be a boot volume.

They come in at the lowest cost

and you get up to 99.9% durability.

On to EBS snapshots.

And an EBS snapshot is a point in time

copy of an EBS volume.

And they are great for backing up your EBS volumes.

And you can use a snapshot to create a new EBS volume.

And if you create a new EBS volume

from an encrypted snapshot, then you will get

an encrypted volume.

And if you create a new EBS volume

from an un-encrypted snapshot,

then you will get an un-encrypted volume.

On to elastic load balancer.

Beginning with Application Load Balancers.

And these provide intelligent load balancing for HTTP

and HTTPS, and they allow you to route

requests to a specific web server based on

the request type.

And think of my example of a car dealership

website where you've got sales information,

loan applications, and repairs and servicing,

and you want to route the incoming requests

to the appropriate application server.

There's also Network Load Balances

and these provide high-performance

load balancing for TCP traffic.

So this is the low-latency option

and it's also the most expensive.

We've got the Classic Load Valancer

and this is the legacy option, which supports

basic HTTP, HTTPS, and TCP load balancing.

And although it's the legacy option,

it may still appear in the exam.

And we've also got Gateway Load Balancers

and these provide load balancing

for third-party virtual appliances,

for example, virtual appliances that

you might find on the AWS marketplace.

And if you need to find the IPv4 address

of the end user for the requests coming

into your load balancer, then look for

the X-Forwarded-For HTTP header.

And this is supported by Application

and Classic Load Balancers.

And if you see a 504 Error with the message

Gateway timeout, then that means

your application is not responding within

the time out period

and you will need to troubleshoot

your application or database server, fix the problem,

and that should clear the error.

So that's it for part 1 of our EC2 summary.

And if you're ready to continue on to part 2,

I will see you in the next lecture.

Thank you.