EC2 instance Storage.

EBS Volume: Elastic Block Store Volume is a network drive you can attach to your instances while they run.

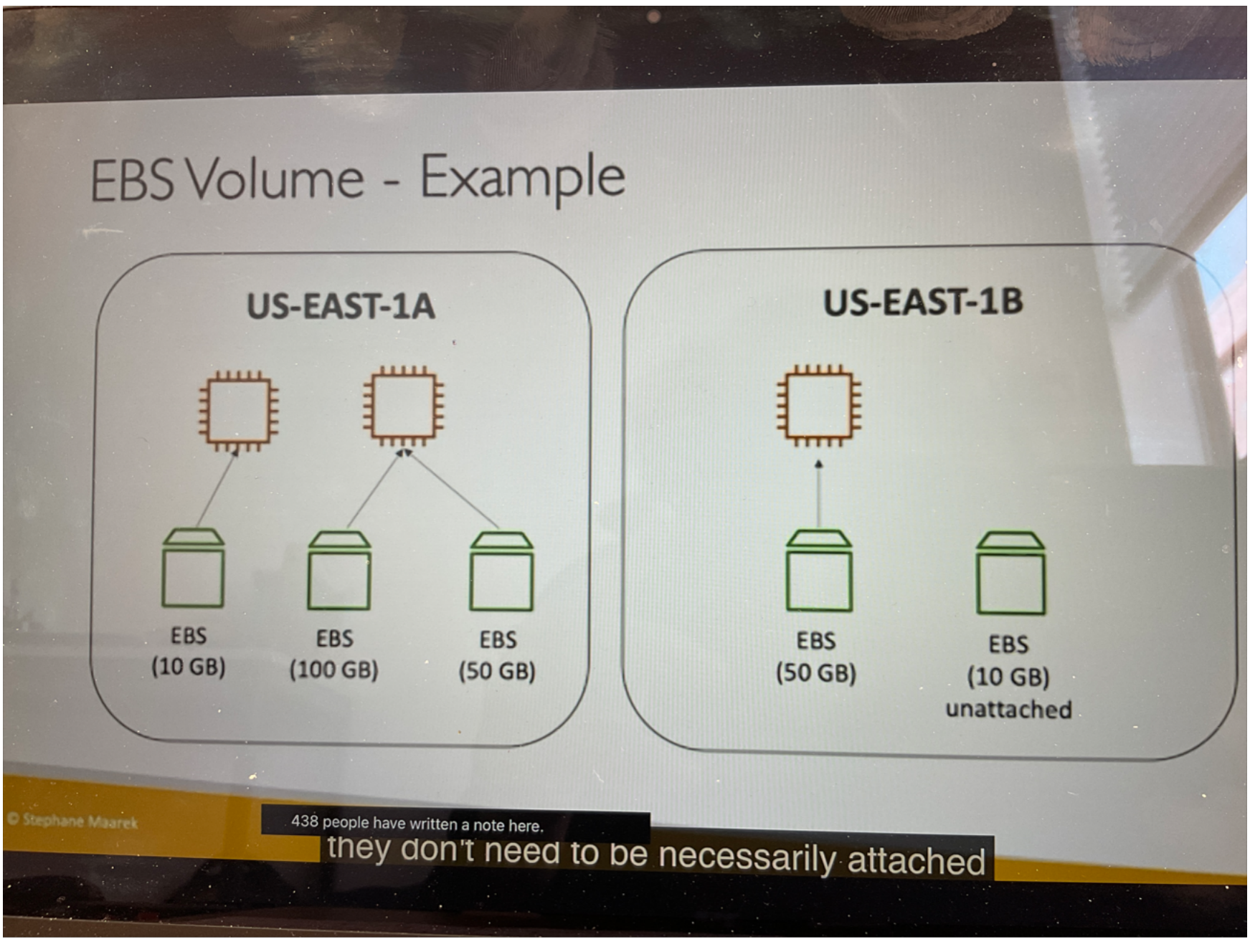
- Allows instances to persist data, even after their termination.
- can only be mounted to one instance - CCP exam.
  (can be multi instance in higher levels)
- They are bound to a specific availability zone.
- "network USB stick"
- Free tier - 30 GB free EBS. storage SSD or magnetic, per month.

- is a network drive (not a physical drive).
  ⇒ latency.
- can be detached from one instance and attached quickly to other.

- Locked to an AZ.
  To move across you first need to snapshot it.

- Have a provisioned capacity in size GB's and I/O ops. OR IOPS
  - You get billed for provisioned capacity.
  - You can ↑ the capacity over time

- You can create EBS instance and leave it unattached too.



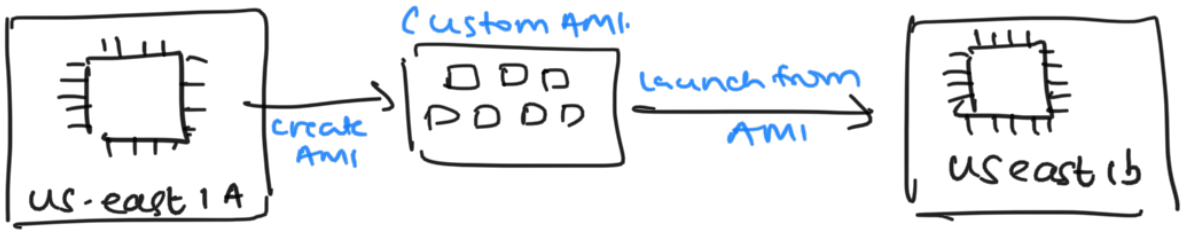
EBS - Delete on termination ☑ - default checked for root.
Root - By default - deleted.
Others - —u—— not deleted.
Can be controlled by AWS CLI/console.
Use case: preserve root volume when instance is terminated.

EBS Snapshots: (Backup).
- not necessary to detach volume to snapshot but recommended.
- can copy snapshots across AZ or Region.

AMI - Amazon Machine Image:
- AMI are customization of EC2 instance
- You can add your own software, config, OS, monitoring...
- Faster boot/config time because all your software is pre packaged
- Built for a specific region (and can be copied across regions).

- Public AMI (AWS Provided)
- Your own AMI.
- AWS Marketplace AMI: (sells)

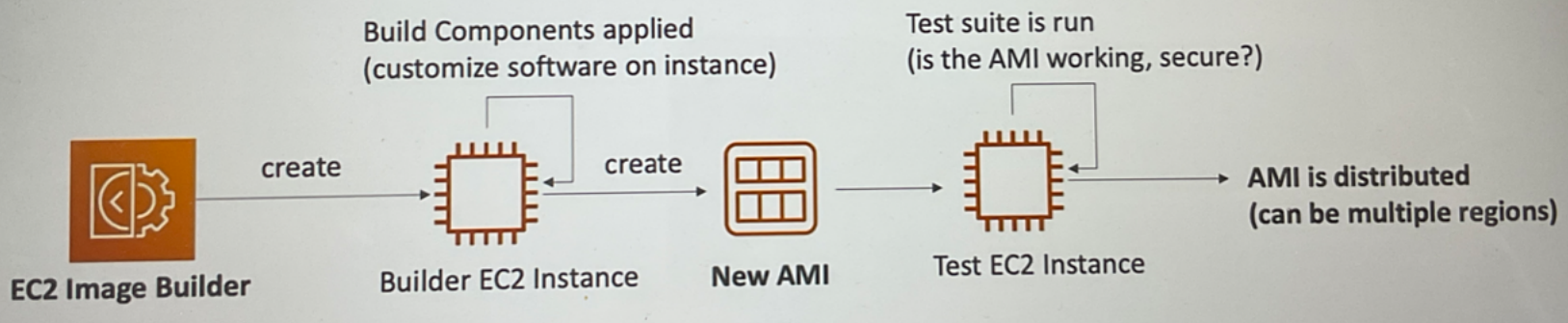
Create AMI from EC2 instance.
* 1) Start an EC2 instance and customize it.
* 2) Stop the instance (for data integrity)
* 3) Build AMI (this will also create EBS snapshots)
* 4) Launch instances from other AMIs.



EC2 Image Builder.
- Used to automate the creation of Virtual machines or container images.
⇒ Automate create, maintain, validate and test EC2 AMIs.
- Can be run on schedule. (weekly, etc).
- Free service (Only pay for underlying resources)
(pay for ami image storage, new instances created.)

EC2 Image Builder

- Used to automate the creation of Virtual Machines or container images
- => Automate the creation, maintain, validate and test EC2 AMIs
- Can be run on a schedule (weekly, whenever packages are updated, etc…)
- Free service (only pay for the underlying resources)



So I will see you in the next lecture.

EC2 Instance Store:- high performance hardware disk.
- EBS volumes have limited performance
- Better I/O performance
- EC2 instance store lose their storage on being stopped (ephemeral)
- Good for buffer / cache / scratch data / temporary content
- Risk of data loss if hardware fails.
- Backups & replicas are your responsibility.

EFS - Elastic File System
- A NFS that can be mounted on 100's of EC2
- Works only with Linux EC2 Instances, in multi AZ
- Highly available, Scalable, expensive.
- pay per use, no capacity planning

EBS	EFS.
- can be attached to only 1 instance	- Shared by everything mounted on it.
- require snapshot to move over regions	- all instances can use. - Shared file system.

EFS Infrequent Access (EFS-IA) : Storage class for EFS.
- cost optimized for files not accessed every day
- 92% lower cost compared to EFS standard.
- will automatically move files to EFS-IA based on last time they were accessed
- Enables EFS IA with a lifecycle policy.
eg move files not used in last 60 days.
- Transparent to the applications accessing EFS.

SRM for EC2 storage

AWS	User.
- Infrastructure.	- Setting up backup / snapshot procedures.
- Replication for data for EBS volumes & EFS drive	- set up data encryption.
- Replacing faulty drives	- Responsibility of any data on the drive
- Ensuring their employees cannot access your data	- Understanding the risk of using EC2 Instance Store.

Amazon FSx:
- Launch third party high performance file systems on AWS
- Fully managed service.

FSx for lustre | FSx for Windows File Server | FSx for NetApp ONTAP

FSx for Windows file Server:

- A fully managed, highly reliable and scalable Windows native shared file system.
- Built on Windows file Server
- Supports SMB protocol & Windows NTFS.
- Integrated with Microsoft Active Directory.
- Can be access from AWS or onprem infrastructure.

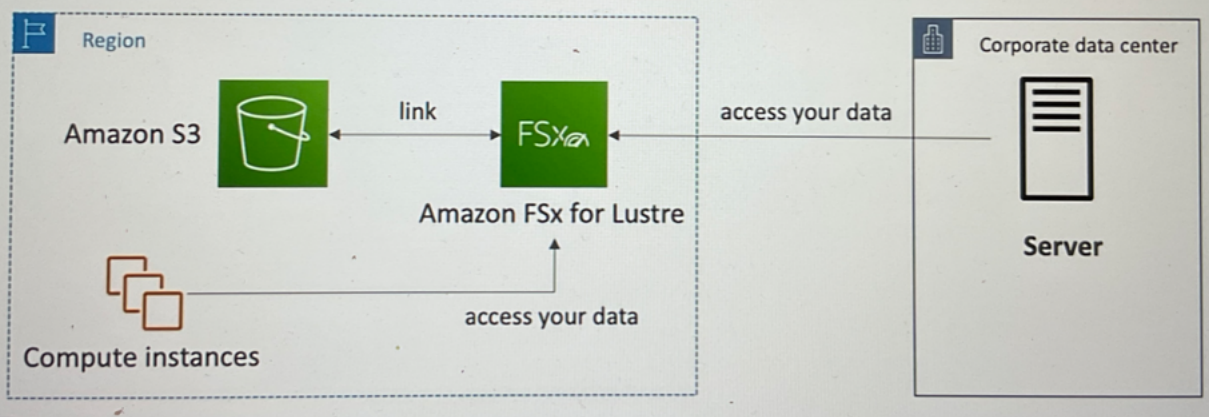
Amazon Fsx for lustre

- fully managed, High performance, scalable file storage for HPC.
- Linux + Cluster = Lustre.
- ML, Analytics, Video Processing, Financial modelling.. etc.
- Scales up to 100s GB/s, millions of IPOS, sub-ms latencies

Amazon FSx for Lustre

FSx

- A fully managed, high-performance, scalable file storage for High Performance Computing (HPC)
- The name Lustre is derived from "Linux" and "cluster"
- Machine Learning, Analytics, Video Processing, Financial Modeling, …
- Scales up to 100s GB/s, millions of IOPS, sub-ms latencies



there is no easy hands-on to do it.