AWS Snow Family Service

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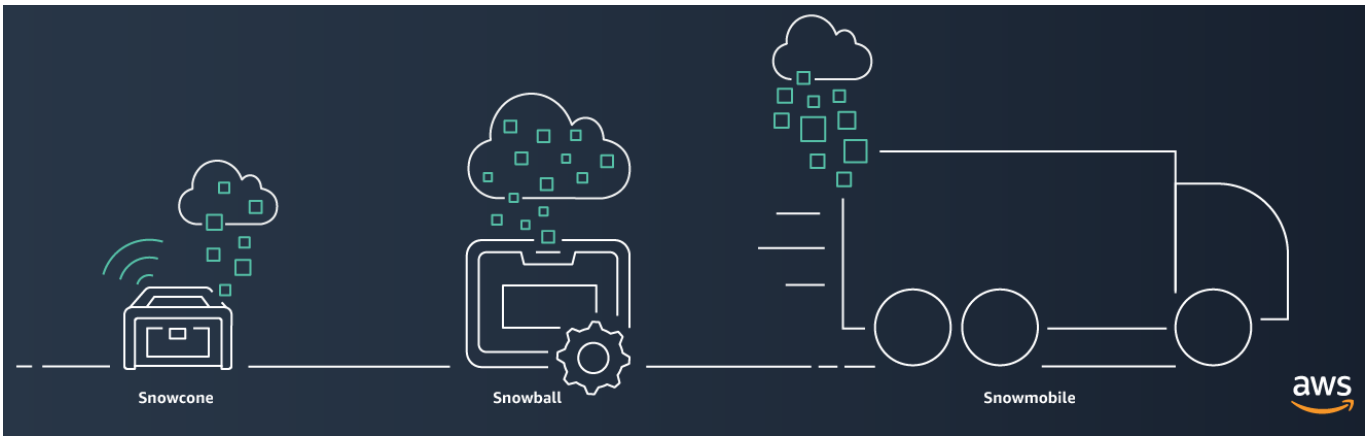

→ AWS Snow family is required for two purposes:

a. Data Migration — transfer heavy data through the physical drive.

b. Edge Computing — Collect and process data in edge cases where the internet does not support

1. Data Migration:

→ This simply means **the transfer of data**.

→ The AWS teams **send a physical storage device** from posts. You need to upload the data to the storage. Then AWS team will upload from the drive to your S3 bucket from a different faster process.

→ There are three devices — **Snowcone, Snowball Edge** and **Snowmobile.**

→ If the data is very large and requires data migration more than a week, using the AWS Snow family service is the best option.

Data Migrations with AWS Snow Family

	Time to Transfer		
	100 Mbps	1Gbps	10Gbps
10 TB	12 days	30 hours	3 hours
100 TB	124 days	12 days	30 hours
1 PB	3 years	124 days	12 days

Challenges:
- Limited connectivity
- Limited bandwidth
- High network cost
- Shared bandwidth (can't maximize the line)
- Connection stability

AWS Snow Family: offline devices to perform data migrations
If it takes more than a week to transfer over the network, use Snowball devices!

Let us analyse three types of devices:

a. AWS Snowball Edge:

It is a physical device sent by AWS for sending large data.

Space: 80 GB or 40 GB (Two variants)

Snowball Edge (for data transfers)

- Physical data transport solution: move TBs or PBs of data in or out of AWS
- Alternative to moving data over the network (and paying network fees)
- Pay per data transfer job
- Provide block storage and Amazon S3-compatible object storage
- Snowball Edge Storage Optimized
  - 80 TB of HDD capacity for block volume and S3 compatible object storage
- Snowball Edge Compute Optimized
  - 42 TB of HDD capacity for block volume and S3 compatible object storage

- Use cases: large data cloud migrations, DC decommission, disaster recovery

b. AWS Snowcone:

→ This device is light and can be carried anywhere in harsh environments.

→ This has lesser storage capacity than Snowball Edge **Space: 8 TB**

AWS Snowcone

- Small, portable computing, anywhere, rugged & secure, withstands harsh environments
- Light (4.5 pounds, 2.1 kg)
- Device used for edge computing, storage, and data transfer
- 8 TBs of usable storage
- Use Snowcone where Snowball does not fit (space-constrained environment)
- Must provide your own battery / cables

- Can be sent back to AWS offline, or connect it to internet and use AWS DataSync to send data

c. AWS Snowmobile:

→ AWS teams literally send a truck to carry data with video surveillance

→ It can carry > **100 PB (i.e. 100000 TB).**

AWS Snowmobile

- Transfer exabytes of data (1 EB = 1,000 PB = 1,000,000 TBs)
- Each Snowmobile has 100 PB of capacity (use multiple in parallel)
- High security: temperature controlled, GPS, 24/7 video surveillance
- Better than Snowball if you transfer more than 10 PB

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Summary of Data:

AWS Snow Family for Data Migrations

Snowcone | Snowball Edge | Snowmobile

	Snowcone	Snowball Edge Storage Optimized	Snowmobile
Storage Capacity	8 TB usable	80 TB usable	< 100 PB
Migration Size	Up to 24 TB, online and offline	Up to petabytes, offline	Up to exabytes, offline
DataSync agent	Pre-installed		
Storage Clustering		Up to 15 nodes	

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Usage of Snow Family:

Snow Family – Usage Process

1. Request Snowball devices from the AWS console for delivery
2. Install the snowball client / AWS OpsHub on your servers
3. Connect the snowball to your servers and copy files using the client
4. Ship back the device when you're done (goes to the right AWS facility)
5. Data will be loaded into an S3 bucket
6. Snowball is completely wiped

2. Edge Computing:

→ There are places where we have data, but not internet facilities or cellular networks such as mining stations underground, ships seas, or travelling trucks.

→ For these AWS teams provide **Snowball Edge** or **Snowcone** device facilities.

→ We can also **borrow** these devices for **long-term 1 or 3 years** at a **discounted price.**

What is Edge Computing?

- Process data while it's being created on an edge location
  - A truck on the road, a ship on the sea, a mining station underground...

- These locations may have
  - Limited / no internet access
  - Limited / no easy access to computing power
- We setup a Snowball Edge / Snowcone device to do edge computing
- Use cases of Edge Computing:
  - Preprocess data
  - Machine learning at the edge
  - Transcoding media streams
- Eventually (if need be) we can ship back the device to AWS (for transferring data for example)

Snow Family – Edge Computing

- Snowcone (smaller)
  - 2 CPUs, 4 GB of memory, wired or wireless access
  - USB-C power using a cord or the optional battery

- Snowball Edge – Compute Optimized
  - 52 vCPUs, 208 GiB of RAM
  - Optional GPU (useful for video processing or machinel learning)
  - 42 TB usable storage
- Snowball Edge – Storage Optimized
  - Up to 40 vCPUs, 80 GiB of RAM
  - Object storage clustering available

- All: Can run EC2 Instances & AWS Lambda functions (using AWS IoT Greengrass)
- Long-term deployment options: 1 and 3 years discounted pricing

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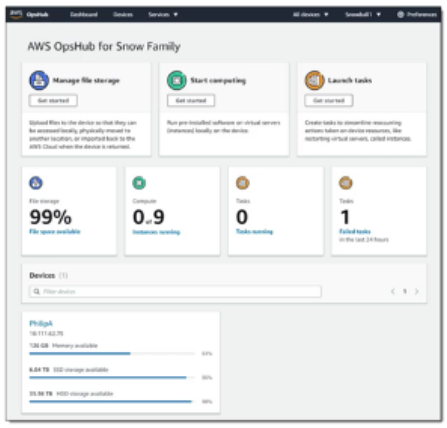
3. AWS OpsHub

→ For handling the AWS snow family device. Earlier users need to use the **terminal/command** line for all work **which was difficult**.

→ So AWS has provided graphical interface software, need to download and is very user friendly.

AWS OpsHub

- Historically, to use Snow Family devices, you needed a CLI (Command Line Interface tool)
- Today, you can use **AWS OpsHub** (a software you install on your computer / laptop) to manage your Snow Family Device
  - Unlocking and configuring single or clustered devices
  - Transferring files
  - Launching and managing instances running on Snow Family Devices
  - Monitor device metrics (storage capacity, active instances on your device)
  - Launch compatible AWS services on your devices (ex: Amazon EC2 instances, AWS DataSync, Network File System (NFS)



https://aws.amazon.com/blogs/aws/aws-snowball-edge-update/

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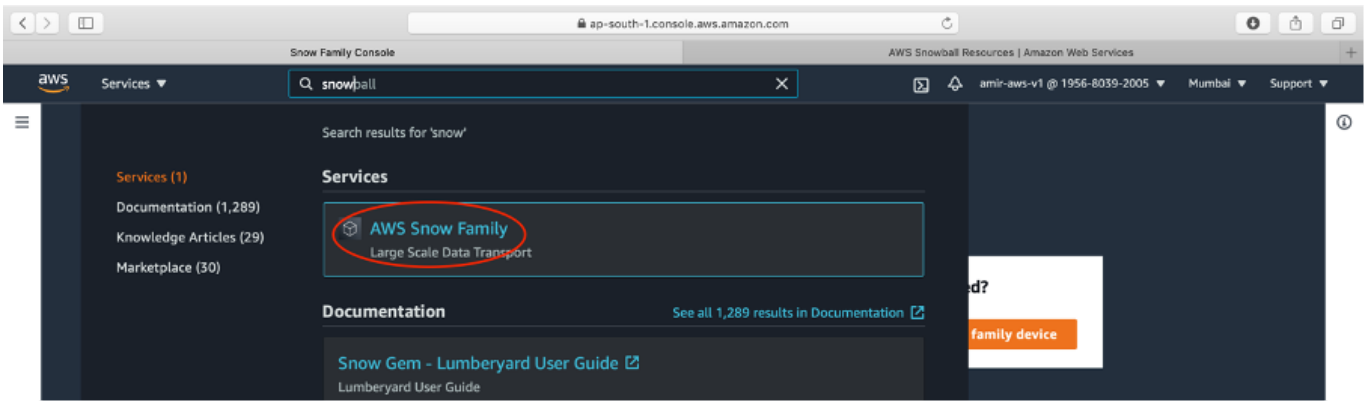
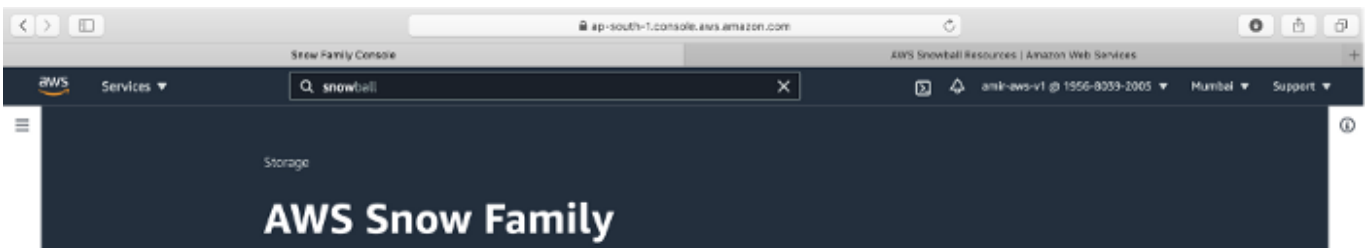
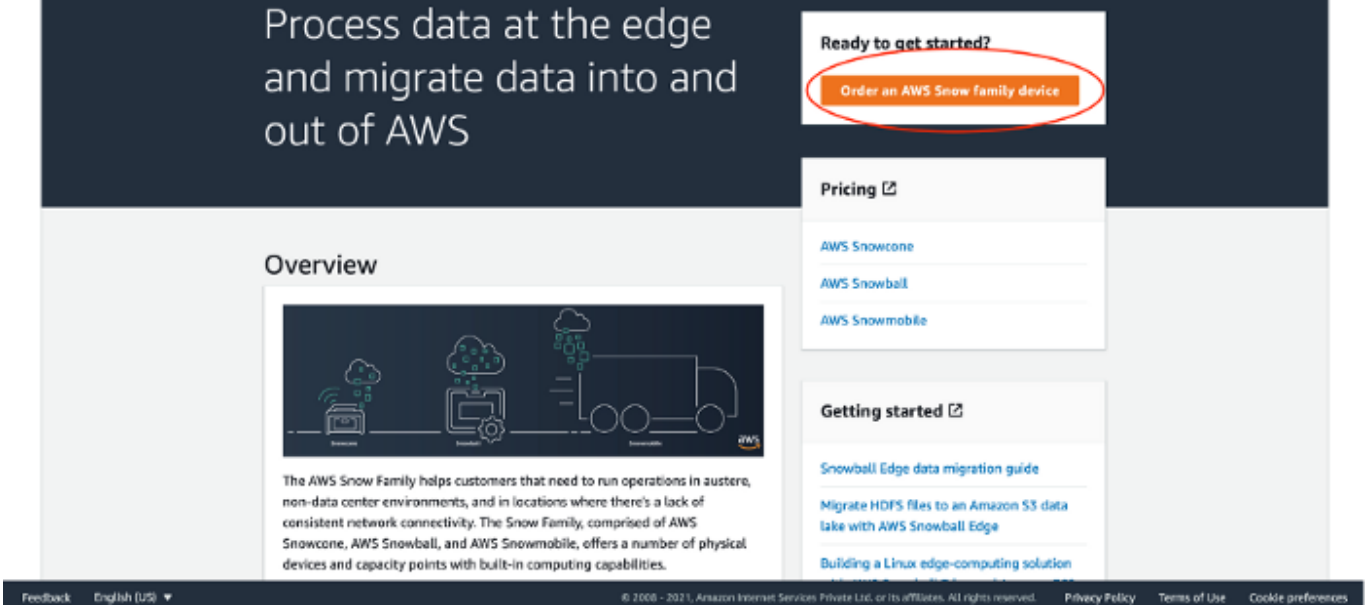
Hands-on Snow Family:

→ Go to the AWS console → Search Snow family



→ Click **Order a Snow family device**:

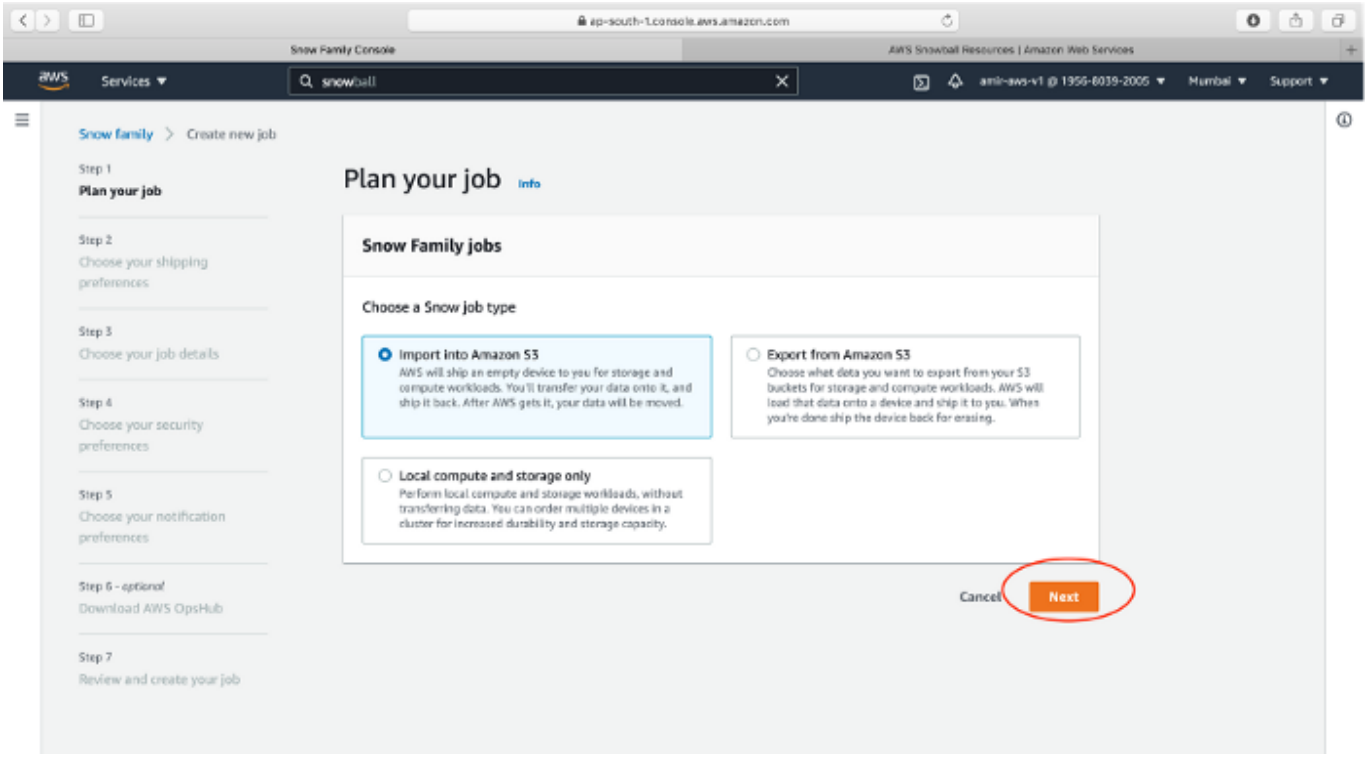




→ On this webpage, we can either book device for :

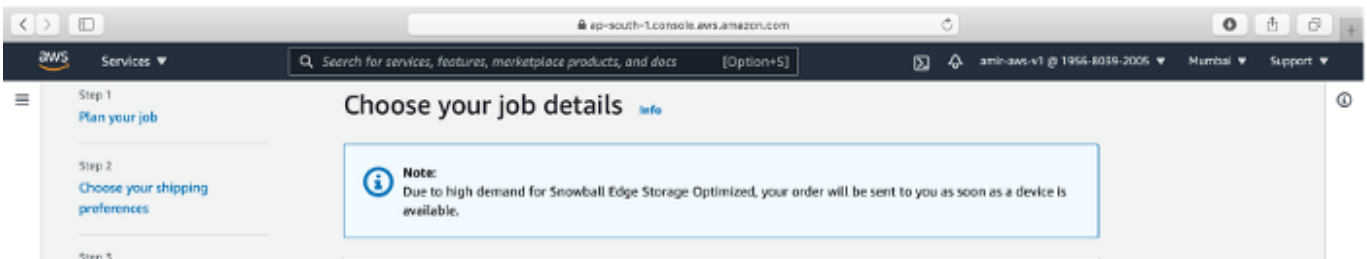
a. Data migration — import and export options (first two)

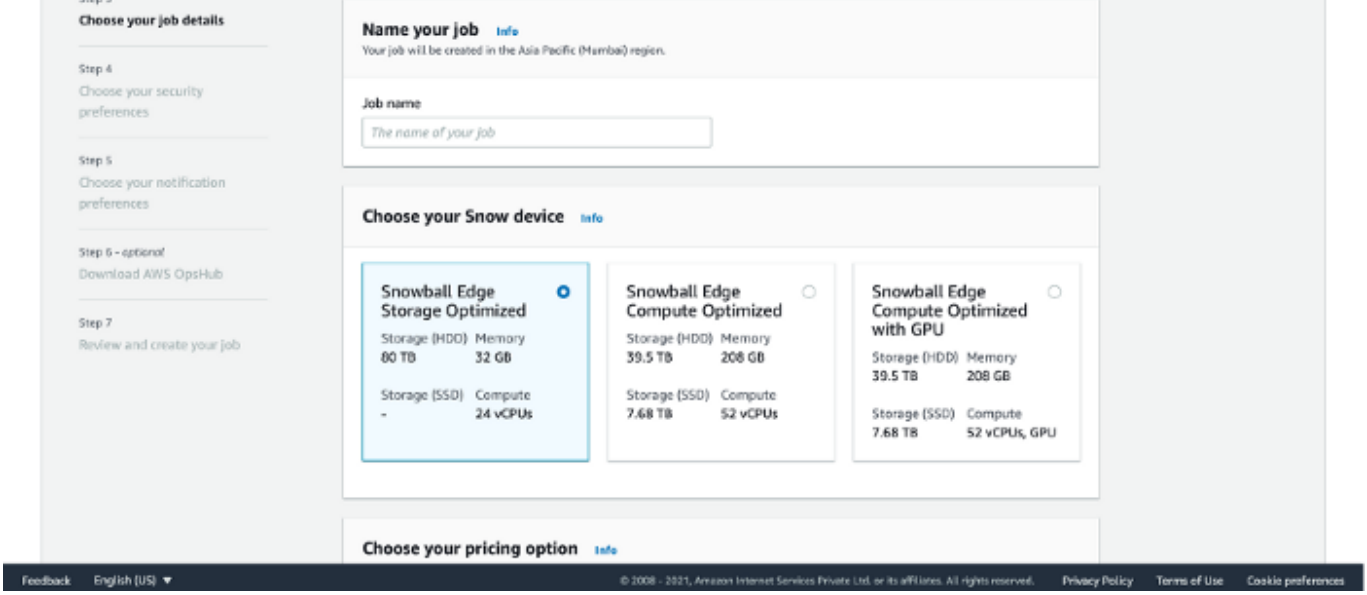
b. Edge Computing — local option (eg underground mining station)



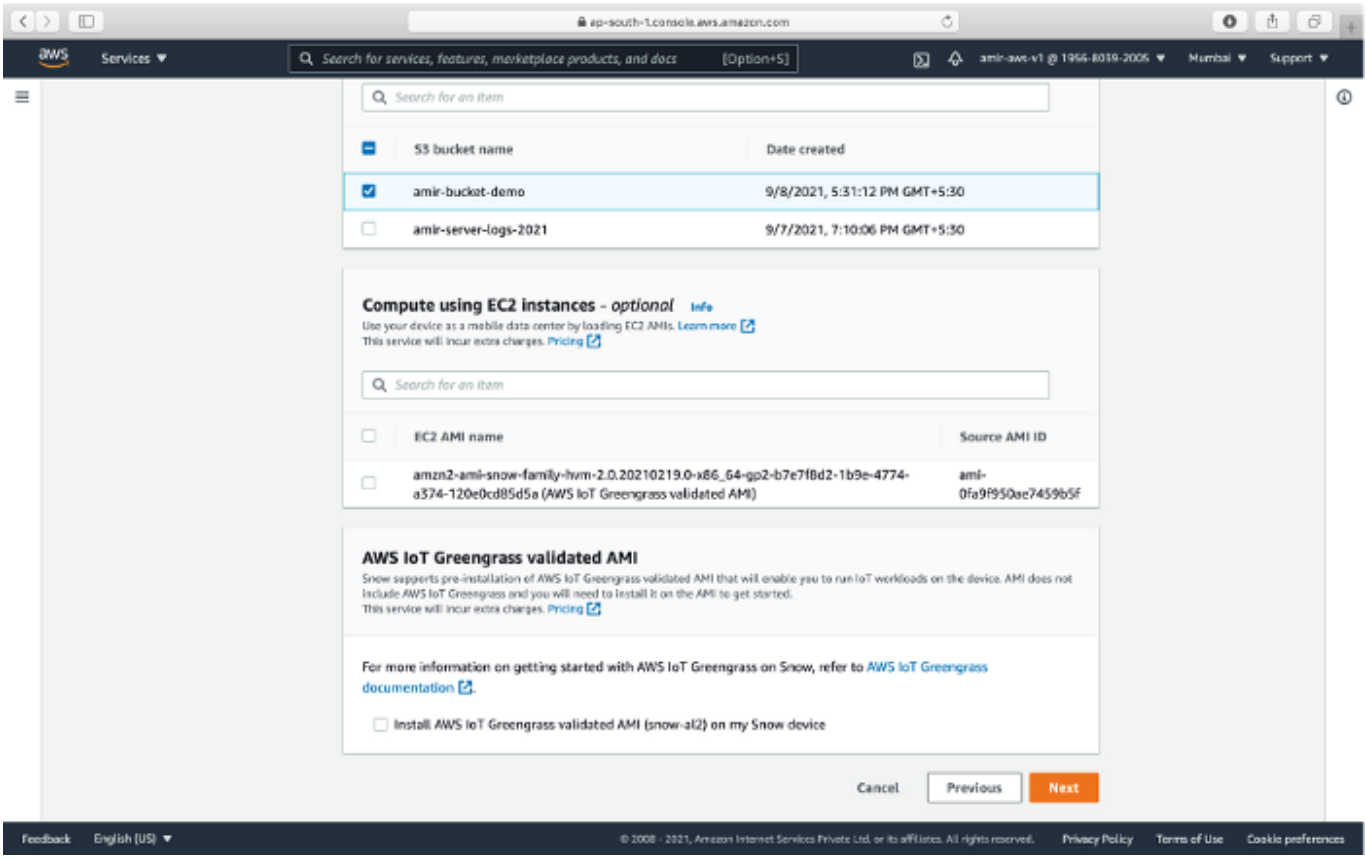
→ Follow the below screens:

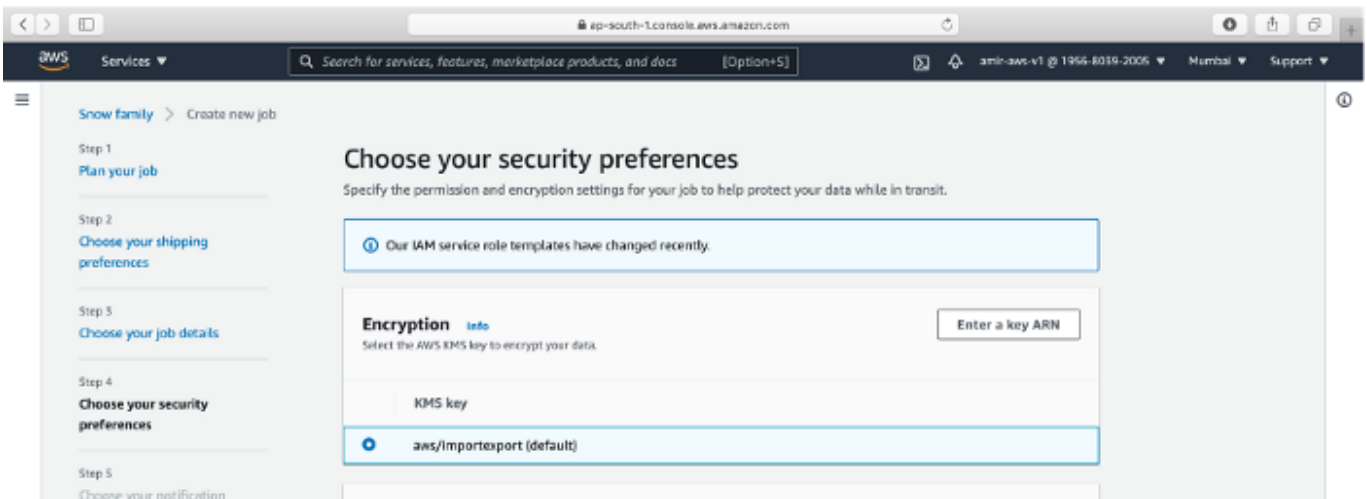
→ Choose the device options:

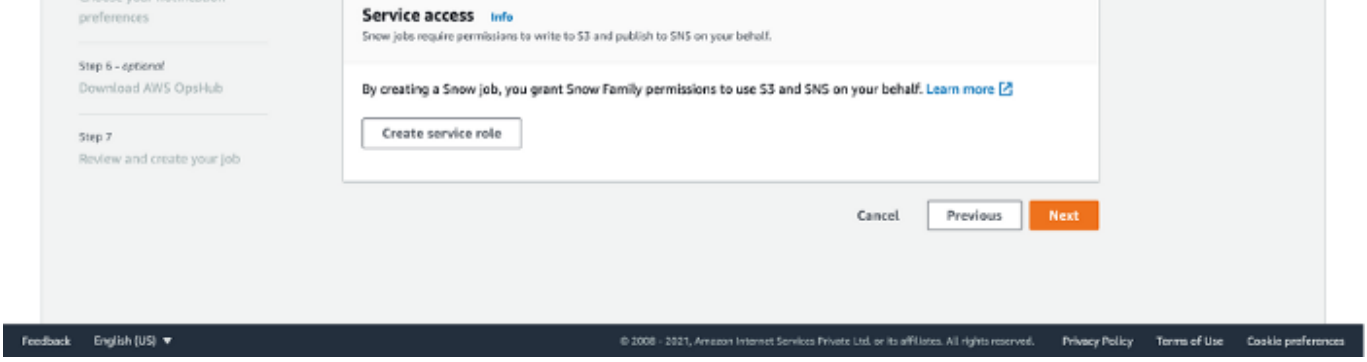




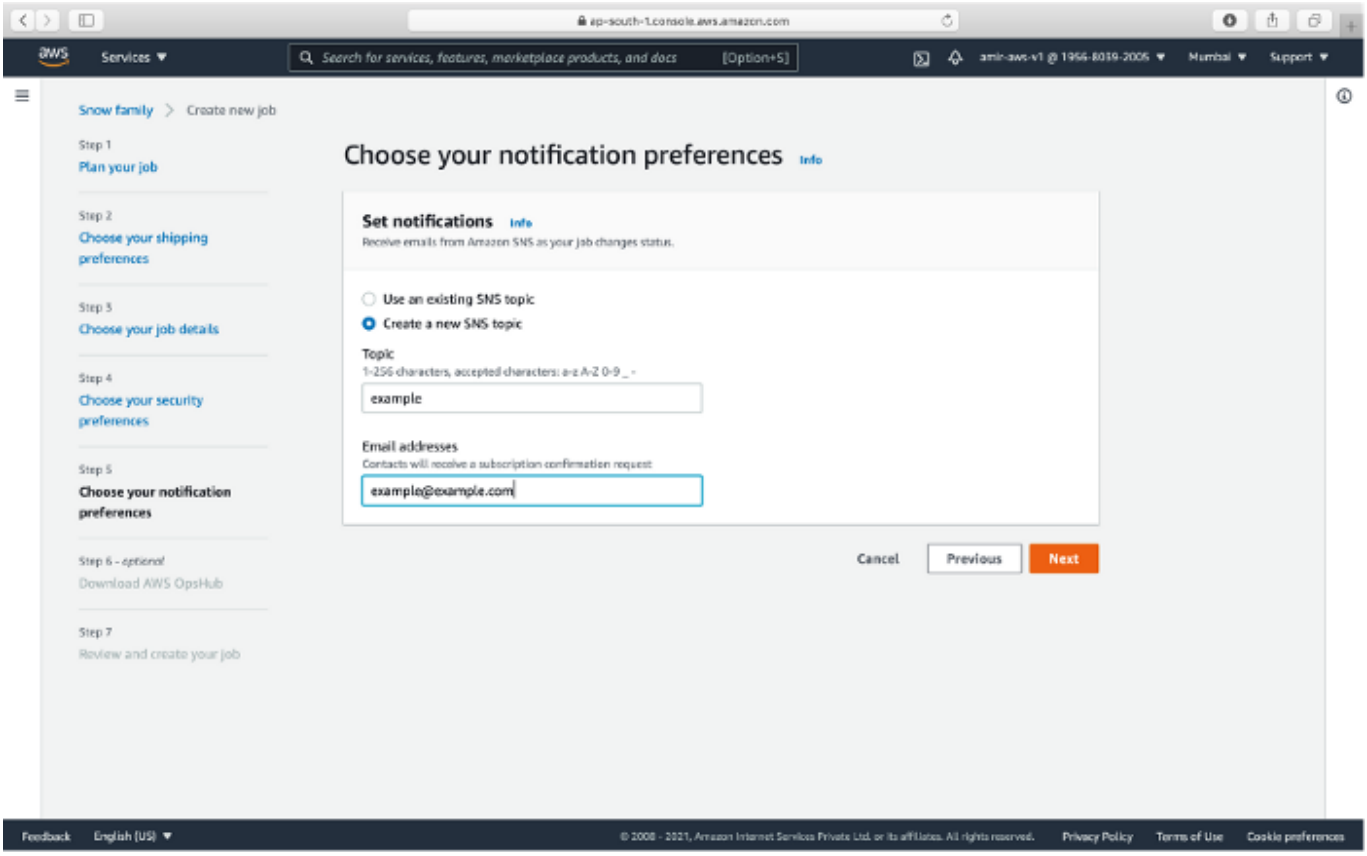
→ Chose the bucket in which you want AWS to import data after you send the data to the device.



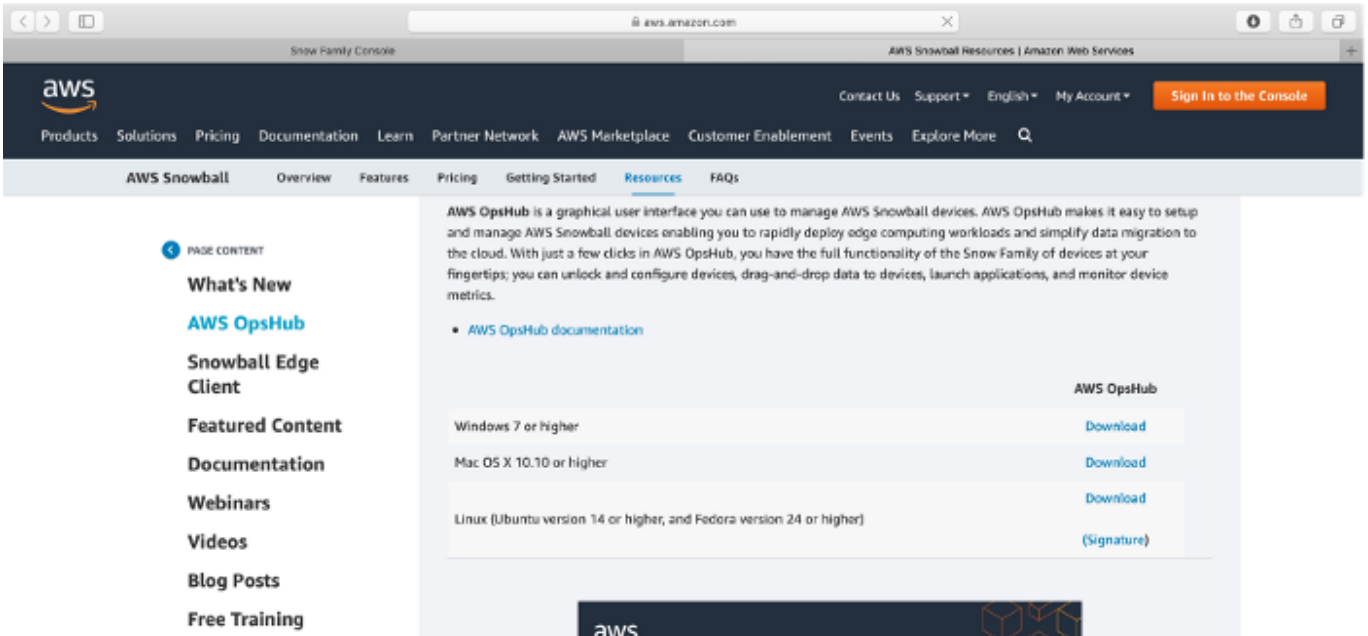




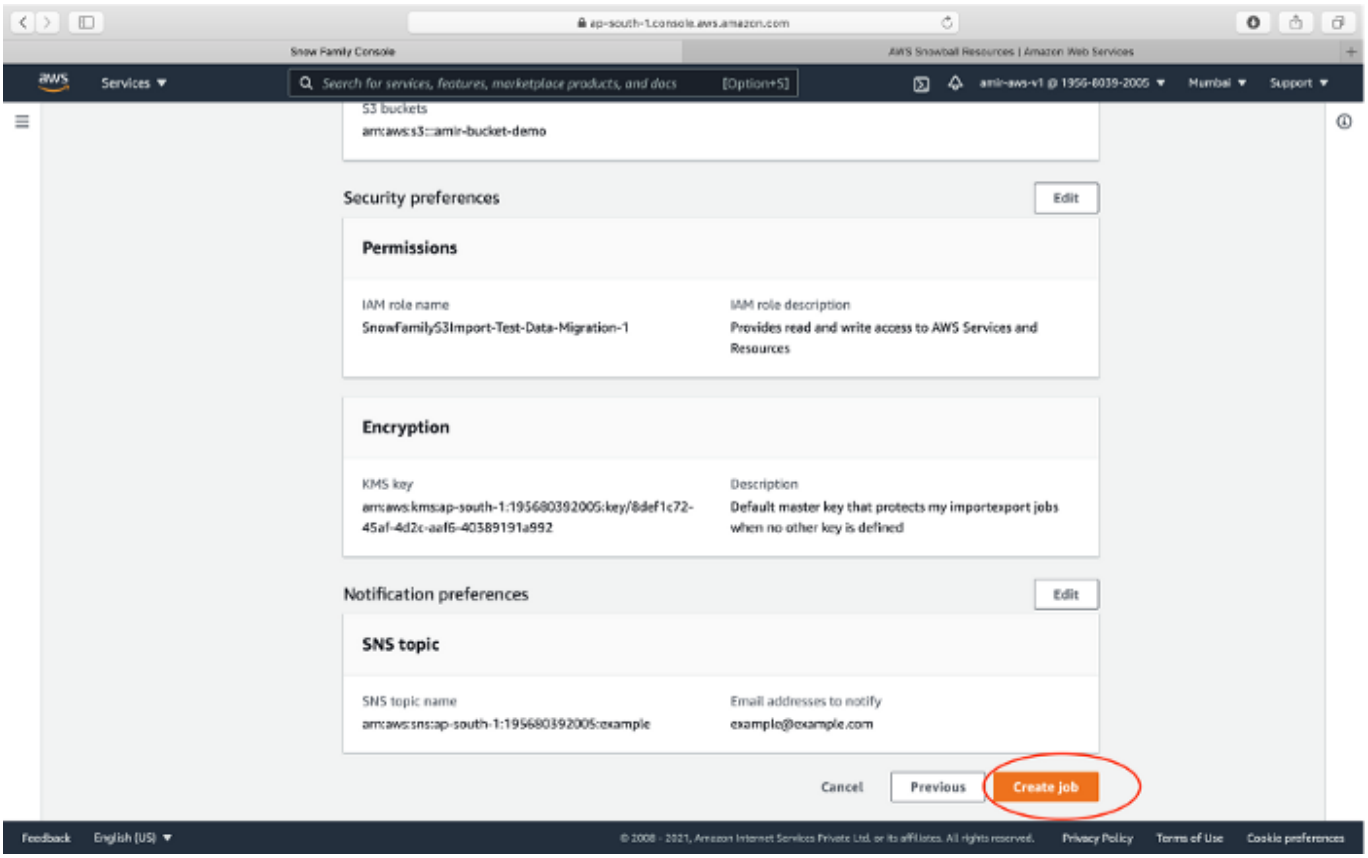
→ Write your **email address** for delivery notifications



→ The next page is to **download AWS OpsHub** — software for the **graphical view** rather than **the command line**. This is available for **all OS environments.**



→ The last step is to review your details and click Create job.



> *NOTE: Click Create job button only for use and not for demo purposes as you will be charged heavily.*

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Hybrid Cloud:

→ Sometimes a company does not require complete data to be on the cloud.

→ Part of it in premises and part in S3 cloud.

→ Hybrid Cloud is the best option at that time.

Hybrid Cloud for Storage

- AWS is pushing for "hybrid cloud"
  - Part of your infrastructure is on-premises
  - Part of your infrastructure is on the cloud
- This can be due to
  - Long cloud migrations
  - Security requirements
  - Compliance requirements
  - IT strategy
- S3 is a proprietary storage technology (unlike EFS / NFS), so how do you expose the S3 data on-premise?

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Amazon Storage Gateway:

→ This bridges between on-premises data and cloud data in S3.

AWS Storage Gateway

- Bridge between on-premise data and cloud data in S3
- Hybrid storage service to allow on-premises to seamlessly use the AWS Cloud
- Use cases: disaster recovery, backup & restore, tiered storage

- Types of Storage Gateway:
  - File Gateway
  - Volume Gateway
  - Tape Gateway
- No need to know the types at the exam

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Video:

Closing Thoughts:

For transferring very large data which requires more than a week of data migration AWS Snow Family service is time and money saving.

> *Thank you for being till the end 🫂 . If you enjoyed this article or learned something new, support me by clicking the share button below to reach more people and/or give me a follow on Twitter to see some other tips, articles, and things I learn and share there.*

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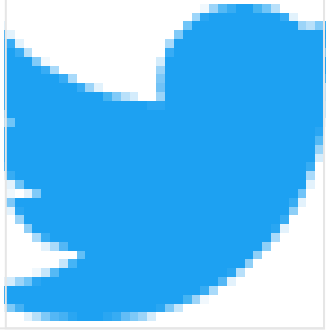

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