



EBS VOLUME FOR WINDOWS SERVER

Amazon Elastic Block Store (Amazon EBS) is a block storage service provided by Amazon Web Services (AWS) for use with Amazon EC2 (Elastic Compute Cloud) instances. It provides durable, high-performance block-level storage that you can attach to your EC2 instances. Here are some key features of Amazon EBS:

1. **Block Storage:** Amazon EBS provides block-level storage volumes, which can be used as raw block devices by EC2 instances. These volumes can be attached to EC2 instances, and the operating system treats them as if they were physical disks.
2. **Durability and Availability:** EBS volumes are designed for durability and high availability. They are automatically replicated within the same Availability Zone (AZ) to protect against component failure.
3. **Elasticity:** You can easily increase or decrease the size of your EBS volumes, and you can also change the volume type to optimize performance based on your workload requirements.
4. **Snapshot and Backup:** EBS volumes can be backed up using snapshots. Snapshots are point-in-time copies of your volumes that are stored in Amazon S3. You can use snapshots to create new volumes or to move volumes across Availability Zones.
5. **Different Volume Types:** Amazon EBS offers different volume types, each designed for specific use cases. These include:
 - a) **General Purpose (gp2):** Balanced performance for a variety of workloads.
 - b) **Provisioned IOPS (io1):** High-performance SSD volume designed for I/O-intensive workloads.
 - c) **Throughput Optimized (st1):** Low-cost HDD volume designed for frequently accessed, throughput-intensive workloads.
 - d) **Cold HDD (sc1):** Lowest-cost HDD volume designed for less frequently accessed workloads.
6. **Encrypted Volumes:** Amazon EBS supports volume encryption, allowing you to encrypt your data at rest.
7. **Lifecycle Management:** You can use Amazon EBS Lifecycle Manager to automate the creation, deletion, and snapshotting of EBS volumes according to a defined policy.

When you launch an EC2 instance, you can attach one or more Amazon EBS volumes to it to provide the necessary storage for your applications and data. This separation of storage and compute resources allows for greater flexibility and scalability in AWS environments.



USE CASES OF ELASTIC BLOCK STORE:

Amazon Elastic Block Store (EBS) is a versatile storage solution that serves various use cases within AWS. Here are some common use cases for EBS:

1. **Operating System and Application Storage:** EBS volumes are often used to store the operating system, applications, and other software for EC2 instances. This allows for quick and easy provisioning of EC2 instances with the necessary software stack.
2. **Database Storage:** EBS is commonly used to provide storage for databases running on EC2 instances. The durability, performance, and snapshot capabilities of EBS make it suitable for hosting database files.
3. **Data Warehousing:** For data warehousing scenarios, where large amounts of data need to be stored and accessed with high performance, provisioned IOPS (io1) volumes can be used to meet the I/O requirements.

4. **Backup and Disaster Recovery:** EBS snapshots allow you to create point-in-time backups of your volumes. These snapshots can be used for backup purposes or to create new volumes, providing a mechanism for disaster recovery.
5. **Development and Testing Environments:** EBS volumes are useful for creating development and testing environments. Snapshots can be used to quickly replicate environments, and the ability to resize volumes provides flexibility in adapting to changing storage requirements.
6. **High-Performance Applications:** Provisioned IOPS (io1) volumes are designed for high-performance applications that require low-latency and consistent I/O performance, such as large-scale transactional databases.
7. **Log and Data Analysis:** For applications that involve log and data analysis, such as big data processing or log processing systems, EBS volumes provide the necessary storage for storing and retrieving large amounts of data.
8. **Content Management Systems (CMS):** EBS volumes can be used to store content and data for content management systems. The ability to resize volumes and take snapshots makes it easier to manage and scale CMS deployments.
9. **Custom Applications with Unique Storage Requirements:** Depending on the specific storage characteristics required by custom applications, different EBS volume types can be selected to optimize performance and cost. This flexibility makes EBS suitable for a wide range of applications.
10. **Encrypted Storage:** EBS volumes support encryption, making them suitable for scenarios where data security and compliance are critical. This is particularly important for storing sensitive data and meeting regulatory requirements.

TO BEGIN WITH THE LAB:

STEP 1: CREATE AN EC2 INSTANCE

1. Log into AWS Console. Then navigate to EC2.
2. On EC2 you have to create an instance for Windows based machine.

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
	WindowsVM	i-0b477f89a4ad3dab8	 Running	 	t2.micro	 2/2 checks passed	No alarms 	eu-west-2a	ec2-18-171-190-159.eu...	18.171.190.159

3. Once you have created your instance. Now you have to log into your instance. Or you must say do RDP (remote desktop protocol) into your server.



😊 STEP 2: CREATE AN EBS VOLUME AND ATTACH IT TO THE INSTANCE

1. Now you should navigate to EBS (Elastic Block Store) volumes.
2. There you will see a volume that has been created for the Windows instance with 30gb of memory.
3. First thing to do is give this volume a name.

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Availability Zone	Volume state	Alarm
WindowsVM-ROOT	vol-019081320c38bf1a9	gp2	30 GiB	100	-	snap-067ffa5e...	2024/01/11 14:51 GMT+5:...	eu-west-2a	In-use	No

4. Now you have to create a new volume which you can attach to your EC2 instance.
5. For that click on create volume.
6. Now you have to select **General Purpose SSD (gp2)** for your volume type.
7. Then for the size reduce it to 16gb. You can reduce the size more if you want.
8. Then select the availability zone.
9. **Always remember, select the availability zone in which you have launched your instance.**
10. Then click on create volume.

Volume settings

Volume type | [Info](#)

General Purpose SSD (gp2) ▾

Size (GiB) | [Info](#)

16

Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS | [Info](#)

100 / 3000

Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.

Throughput (MiB/s) | [Info](#)

Not applicable

Availability Zone | [Info](#)

eu-west-2a ▾

Snapshot ID - *optional* | [Info](#)

Don't create volume from a snapshot ▾ C

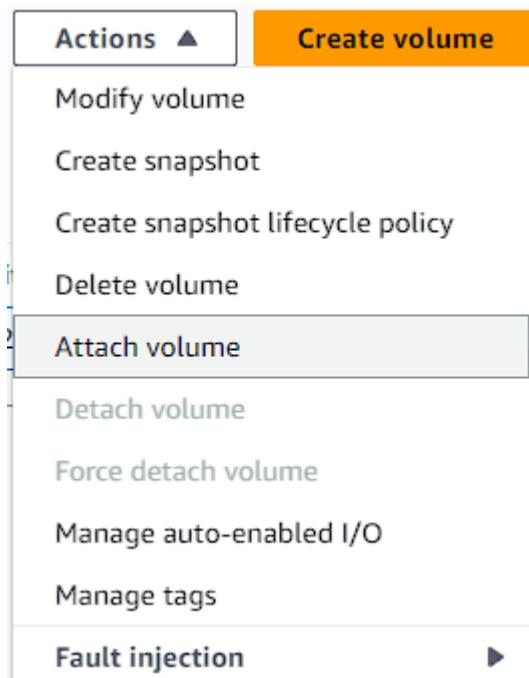
Encryption | [Info](#)

Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

Encrypt this volume

11. As you can see the volume has been created and it has renamed too.
12. Currently the volume is in available state. It is not in use.
13. To make it in use for the instance, you have to click on actions then click on attach volume.

	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Availability Zone	Volume state	Alarm
<input type="checkbox"/>	WindowsVM-DATA	vol-03b7bbc9421f54705	gp2	16 GiB	100	-	-	2024/01/11 20:47 GMT+5:...	eu-west-2a	Available	No



14. Once you have clicked on attach volume you can see that you have to select your instance here.
15. Then click on attach volume.

Attach volume Info

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

Basic details

Volume ID
 vol-03614324e8020e0f9 (appvm01-data)

Availability Zone
eu-west-2a

Instance Info
 Only instances in the same Availability Zone as the selected volume are displayed.

Device name Info

Recommended device names for Linux: /dev/sda1 for root volume. /dev/sd[f-p] for data volumes.

i Newer Linux kernels may rename your devices to `/dev/xvdf` through `/dev/xvdp` internally, even when the device name entered here (and shown in the details) is `/dev/sdf` through `/dev/sdp`.

Cancel

16. Here you can see that the volume is in running state now. Or say it is in use for your instance.

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Availability Zone	Volume state	Alarm
WindowsVM-DATA	vol-03b7bbc9421f54705	gp2	16 GiB	100	-	-	2024/01/11 20:47 GMT+5:...	eu-west-2a	In-use	No ala

17. Now go back to your server which you have logged in.

18. Then open server manager and wait for it to get set up.

19. Here in the server manager click on **File and Storage Services**.

The screenshot shows the Microsoft Server Manager dashboard. On the left, there's a navigation menu with links like 'Dashboard', 'Local Server', 'All Servers', and 'File and Storage Services'. The 'File and Storage Services' link is highlighted with a red box. The main content area has a 'WELCOME TO SERVER MANAGER' header and a 'QUICK START' section with five numbered steps: 1. Configure this local server, 2. Add roles and features, 3. Add other servers to manage, 4. Create a server group, and 5. Connect this server to cloud services. Below this is a 'ROLES AND SERVER GROUPS' section showing four items: 'File and Storage Services' (1 role), 'IIS' (1 role), 'Local Server' (1 role), and 'All Servers' (1 role). Each item has a green status icon and a list of sub-components: 'Manageability', 'Events', 'Performance', and 'BPA results' for File and Storage Services; 'Manageability', 'Events', 'Services', 'Performance', and 'BPA results' for IIS; 'Manageability', 'Events', 'Services', 'Performance', and 'BPA results' for Local Server; and 'Manageability', 'Events', 'Services', 'Performance', and 'BPA results' for All Servers. The bottom of the screen shows the date and time: '1/11/2024 3:30 PM' for the first three and '1/11/2024 3:30 PM' for the fourth.

20. Now you can see that your 16gb of volume is present.

21. First thing you need to do is bring it online.

DISKS
All disks | 2 total

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0		Online	30.0 GB	0.00 B	MBR				SAS	AWS PVDISK
1		Offline	16.0 GB	16.0 GB	Unknown	✓			SAS	AWS PVDISK

Last refreshed on 1/11/2024 3:32:25 PM

VOLUMES
Related Volumes | 1 total

Volume	Status	Provisioning	Capacity	Free Space	Deduplication Rate	Deduplication Savings	Percent Used
C:	Fixed		30.0 GB	15.1 GB			

STORAGE POOL
AWS PVDISK on EC2AMAZ-BDFSC

22. Now select your disk, then right click on it. You will see bunch of options, but you have to click on Bring Online.

0	Online	30.0 GB	0.00 B	MBR	SAS	AWS PVDISK	
1	Offline	16.0 GB	16.0 GB	Unknown	✓	SAS	AWS PVDISK

23. Once your disk is in online state. Again, right click on it, but this time click on Initialize.

0	Online	30.0 GB	0.00 B	MBR	SAS	AWS PVDISK	
1	Online	16.0 G	16.0 GB	Unknown	✓	SAS	AWS PVDISK

24. After initializing you will see that your disk has been recognised.

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
0		Online	30.0 GB	0.00 B	MBR				SAS	AWS PVDISK
1		Online	16.0 GB	16.0 GB	GPT				SAS	AWS PVDISK

25. Now the only thing left is to create a volume out of this disk.

26. So, for that again right click on it and click on **new volume**.

Number	Virtual Disk	Status	Capacity	Unallocated	Partition	Read Only	Clustered	Subsystem	Bus Type	Name
▲ EC2AMAZ-BDFFSQBF (2)										
0	Online	30.0 GB	0.00 B	MBR					SAS	AWS PVDISK
1	New Volume...	Online	16.0 GB	GPT					SAS	AWS PVDISK

27. After that just click next on it until you get to the Confirmation. Then click on create.

Confirm selections

- Before You Begin
- Server and Disk
- Size
- Drive Letter or Folder
- File System Settings
- Confirmation**
- Results

Confirm that the following are the correct settings, and then click Create.

VOLUME LOCATION	
Server:	EC2AMAZ-BDFFSQBF
Disk:	Disk 1
Free space:	16.0 GB
VOLUME PROPERTIES	
Volume size:	16.0 GB
Drive letter or folder:	D:\
Volume label:	New Volume
FILE SYSTEM SETTINGS	
File system:	NTFS
Short file name creation:	Disabled
Allocation unit size:	Default

< Previous Next > Create Cancel

28. After that you will see that the new volume has been created.

Completion

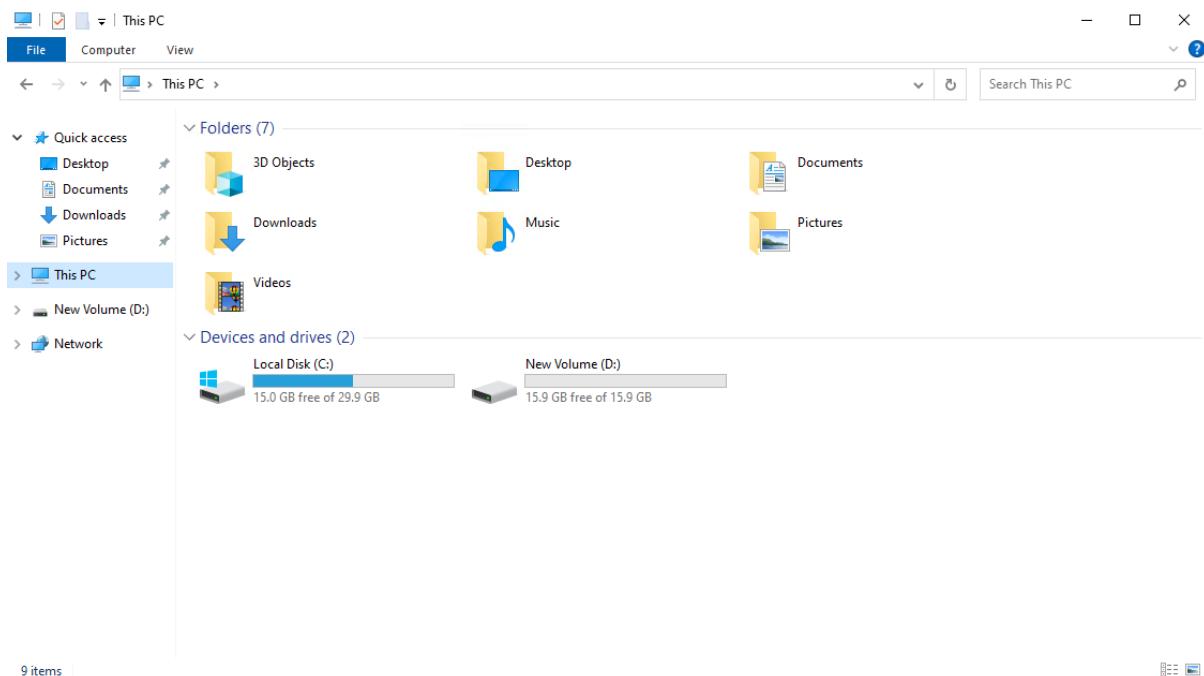
Before You Begin
Server and Disk
Size
Drive Letter or Folder
File System Settings
Confirmation
Results

You have successfully completed the New Volume Wizard.

Task	Progress	Status
Gather information	<div style="width: 100%;"></div>	Completed
Create new partition	<div style="width: 100%;"></div>	Completed
Format volume	<div style="width: 100%;"></div>	Completed
Add access path	<div style="width: 100%;"></div>	Completed
Update cache	<div style="width: 100%;"></div>	Completed

< Previous Next > Close Cancel

29. So, now if you will go to your file explorer, the go to this pc you will see your new disk there.



FOR THE CLEAN UP PROCESS:

FIRST YOU NEED TO GO TO THE SERVER MANAGER; THERE YOU NEED TO TAKE YOUR VOLUME OFFLINE.

THEN GO BACK TO THE CONSOLE AND DETACH TO VOLUME FROM THE INSTANCE. ONCE YOUR VOLUME IS IN AVAILABLE STATE, THEN JUST DELETE IT.

AFTER THAT GO TO YOUR INSTANCE AND DELETE THAT TOO.