# Docker Volume Examples on EC2

## 1. Default Location (Local Storage)

By default, Docker stores volumes under `/var/lib/docker/volumes/`.  
  
```bash  
# Run a container with a default volume  
docker run -d --name my\_container -v my\_volume:/data busybox  
```  
  
This creates a volume named `my\_volume` stored under `/var/lib/docker/volumes/my\_volume/\_data` on the EC2 instance.

## 2. Bind Mounts

You can mount a directory from the EC2 instance directly into the container.  
  
```bash  
# Create a directory on the host  
mkdir -p /home/ec2-user/mydata  
  
# Run a container with a bind mount  
docker run -d --name my\_container -v /home/ec2-user/mydata:/data busybox  
```  
  
This mounts the `/home/ec2-user/mydata` directory from the EC2 instance to the `/data` directory inside the container.

## 3. Named Volumes

Named volumes are managed by Docker and can be created and referenced by name.  
  
```bash  
# Create a named volume  
docker volume create my\_named\_volume  
  
# Run a container with the named volume  
docker run -d --name my\_container -v my\_named\_volume:/data busybox  
```  
  
This creates a volume named `my\_named\_volume` stored under `/var/lib/docker/volumes/my\_named\_volume/\_data` on the EC2 instance.

## 4. External Storage (Amazon EFS)

To use Amazon EFS, you first need to create an EFS file system and mount it on the EC2 instance.  
  
```bash  
# Install the NFS client  
sudo yum install -y nfs-utils  
  
# Create a directory for the EFS mount  
sudo mkdir -p /mnt/efs  
  
# Mount the EFS file system (replace with your EFS DNS name)  
sudo mount -t nfs4 -o nfsvers=4.1 fs-12345678.efs.us-west-2.amazonaws.com:/ /mnt/efs  
  
# Run a container with the EFS mount  
docker run -d --name my\_container -v /mnt/efs:/data busybox  
```  
  
This mounts the EFS file system to `/mnt/efs` on the EC2 instance and then mounts it into the container's `/data` directory.

## 5. External Storage (Amazon S3)

To use Amazon S3, you would typically use a third-party tool like `s3fs` to mount the S3 bucket.  
  
```bash  
# Install s3fs  
sudo yum install -y s3fs-fuse  
  
# Create a directory for the S3 mount  
sudo mkdir -p /mnt/s3bucket  
  
# Mount the S3 bucket (replace with your bucket name and credentials)  
echo "ACCESS\_KEY:SECRET\_KEY" > ~/.passwd-s3fs  
chmod 600 ~/.passwd-s3fs  
s3fs my-s3-bucket /mnt/s3bucket -o passwd\_file=~/.passwd-s3fs  
  
# Run a container with the S3 mount  
docker run -d --name my\_container -v /mnt/s3bucket:/data busybox  
```  
  
This mounts the S3 bucket to `/mnt/s3bucket` on the EC2 instance and then mounts it into the container's `/data` directory.