



# AWS EFS



**CLARUSWAY**  
WAY TO REINVENT YOURSELF



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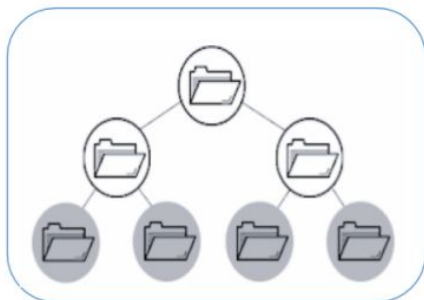
# Introduction to EFS



# ► Introduction to EFS

## Recap Storage Options

### File Storage



### HTTP(S) Interface

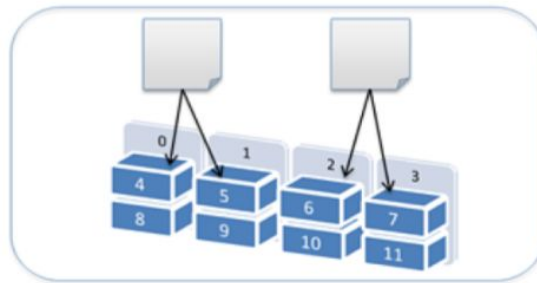
### Object Storage



- Store virtually unlimited files.
- Maintain file revisions.
- HTTP(S) based interface.
- Files are distributed in different physical nodes.

**Object=**  
-File  
-Unique ID  
-Metadata

### Block Storage

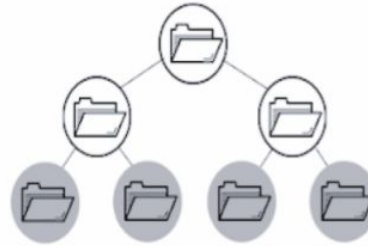


- File is split and stored in fixed sized blocks.
- Capacity can be increased by adding more nodes.
- Suitable for applications which require high IOPS, database, transactional data.



# ► Introduction to EFS

## What is EFS?



- Amazon Elastic File System (Amazon EFS) is service that provides a simple, scalable, fully managed **elastic NFS file system**.
- It offers a traditional **file storage** paradigm, with data organized into **directories and subdirectories**.



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## Features of EFS



# ► Features of EFS

## Scalability-Cost

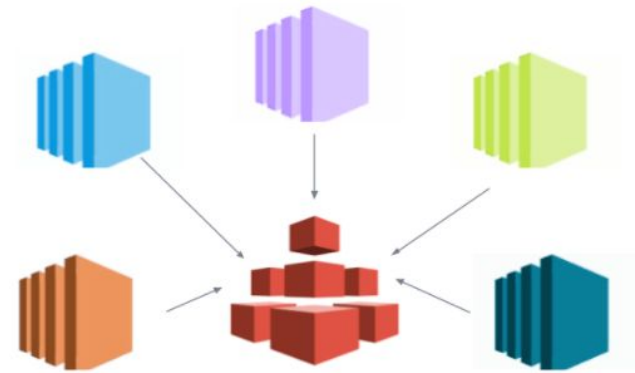
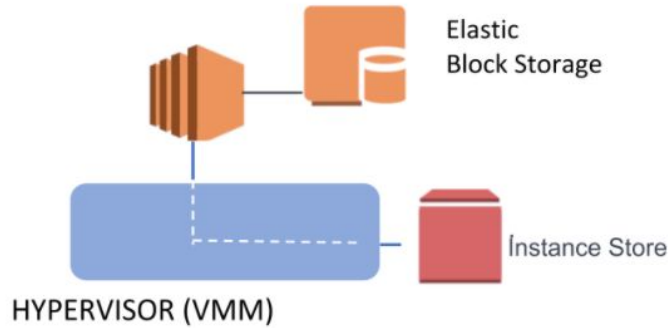


- Since EFS is scalable, it increases and decreases the storage capacity automatically as you add and delete files,
- With Amazon EFS, you pay only for the storage used by your file system and there is no minimum fee or setup cost.



# ► Features of EFS

## Attaching



- Unlike \*EBS, multiple Amazon EC2 instances in all type can be attached Amazon EFS file system at the same time.

\*Except Nitro-based instances in the same Availability Zone.



# ► Features of EFS

## Storage Classes

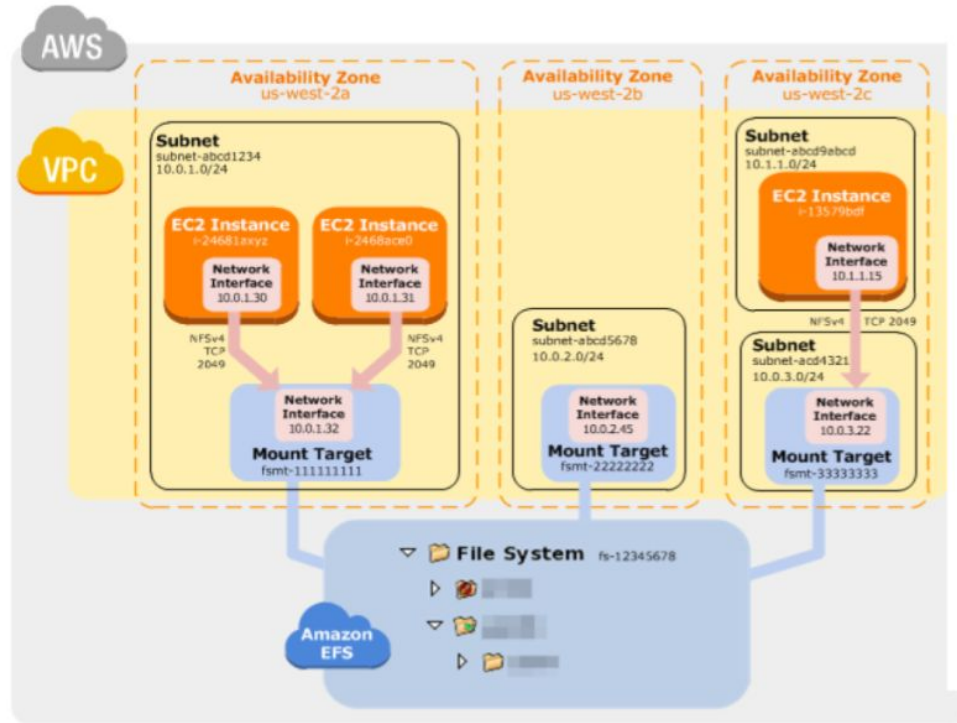


- Amazon EFS offers two storage classes, **Standard** and **Infrequent Access**.
- The Standard storage class is used to store **frequently** accessed files.
- The Infrequent Access (IA) storage class is a lower-cost storage class that's designed for storing long-lived, **infrequently accessed** files cost-effectively.



# ► Introduction to S3

## Mount Target



- To access your Amazon EFS file system in a VPC, you create one or more mount targets in the VPC.
- You can create one mount target in **each Availability Zone** in an AWS Region. If there are **multiple subnets** in an Availability Zone in your VPC, you create a mount target **in one of the subnets**. Then all EC2 instances in that Availability Zone share that mount target



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## Comparison of Storage System



# ► Comparison of Storage Systems



Amazon EFS



S3



EBS

- Amazon **S3 is cheapest** for data storage alone and EBS is cheaper than EFS
- **EBS and EFS are both faster** than Amazon S3, with high IOPS and lower latency.
- Amazon **S3 can not be attached EC2**. AWS EBS is only available for single\* instance. You can mount EFS onto several EC2 instances at the same time.
- **S3 and EFS** have unlimited storage size. Single EBS has 16 TB max. storage size.



# ► Comparison of Storage Systems



Amazon EFS

- EFS is best used for **large quantities of data**, such as large analytic workloads.
- Also, it is suitable for **global content management** systems and media processing workflows.



S3

- Useful for hosting **website images and videos, data analytics** of mobile/web applications.
- Data which is need to be **access from anywhere**.



EBS

- Suitable for applications which **require high IOPS**, business continuity, and **database management**.



	Performance	Availability and Accessibility	Access Control	Cost
<b>Amazon S3</b>	<ul style="list-style-type: none"><li>- Supports 3500 PUT / LIST / DELETE requests per second</li><li>- Scalable to 5500 GET requests per second</li></ul>	<ul style="list-style-type: none"><li>- Usually 99.9% available</li><li>- If lower, returns 10-100% of cost as service credits</li><li>- Accessible via Internet using APIs</li></ul>	<ul style="list-style-type: none"><li>- Access is based on IAM</li><li>- Uses bucket policies and user policies</li><li>- Public access via Block Public Access</li></ul>	<ul style="list-style-type: none"><li>- <b>Free tier:</b> 5GB</li><li>- <b>First 50 TB/month:</b> \$0.023 per GB</li><li>- <b>Next 450 TB/month:</b> \$0.022 per GB</li><li>- <b>Over 500 TB/month:</b> \$0.021 per GB</li></ul>
<b>AWS EBS</b>	<ul style="list-style-type: none"><li>- HDD volumes: 250-500 IOPS/volume depending on volume type</li><li>- SSD volumes: 16-64K IOPS/volume</li></ul>	<ul style="list-style-type: none"><li>- 99.99% available</li><li>- Accessible via single EC2 instance</li></ul>	<ul style="list-style-type: none"><li>- Security groups</li><li>- User-based authentication (IAM)</li></ul>	<ul style="list-style-type: none"><li>- <b>Free tier:</b> 30GB</li><li>- <b>General Purpose:</b> \$0.045 per GB/month</li><li>- <b>Provisioned SSD:</b> \$0.125 per GB/month, \$0.065 per IOPS/month</li></ul>
<b>AWS EFS</b>	<ul style="list-style-type: none"><li>- 3GB/s baseline performance</li><li>- Up to 10GB/s</li><li>- Up to 7K IOPS</li></ul>	<ul style="list-style-type: none"><li>- No publicly available SLA</li><li>- Up to 1,000 concurrent EC2 instances</li><li>- Accessible from any AZ or region</li></ul>	<ul style="list-style-type: none"><li>- IAM user-based authentication</li><li>- Security groups</li></ul>	<ul style="list-style-type: none"><li>- <b>Standard storage:</b> \$0.30-\$0.39 per GB-month depending on region</li><li>- <b>Infrequent storage:</b> \$0.025-\$0.03 per GB-month</li><li>- <b>Provisioned throughput:</b> \$6 per MB/s-month</li></ul>





# THANKS!

## Any questions?

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