

AWS-Elastic FILE SYSTEMS

Amazon Elastic File System (Amazon EFS)

EFS provides simple, scalable, elastic [file storage](#) for use with AWS cloud services and on-premises resources. Amazon EFS is built to elastically scale on demand without disrupting applications, growing and shrinking automatically as you add and remove files, so your applications have the storage they need, when they need it.

Amazon EFS is a regional service designed for high availability and durability supporting a broad spectrum of use cases, including web serving and content management, enterprise applications, media and entertainment processing workflows, home directories, database backups, developer tools, container storage, and big data analytics workloads.

How it works:

When mounted on amazon EC2 instances, an amazon EFS file system provides a standard file system interface and file system access semantics, allowing you to seamlessly integrate amazon EFS with your existing applications and tools. Multiple amazon EC2 instances can access an amazon EFS file system at the same time, allowing amazon EFS to provide a common data source for workloads and applications running on more than one amazon EC2 instance.

You can mount your amazon EFS file systems on your on-premises datacenter servers when connected to your amazon VPC with [AWS direct connect](#). You can mount your EFS file systems on on-premises servers to migrate data sets to EFS, enable cloud bursting scenarios, or backup your on-premises data to EFS.

Benefits:

- ❖SIMPLE
- ❖SHARED FILE STORAGE
- ❖SEAMLESS INTEGRATION
- ❖AUTOMATICALLY SCALES
- ❖SCALEABLE PERFORMANCE
- ❖LOW COST
- ❖HIGHLY AVAILABLE AND DURABLE
- ❖OPTIMIZED TRANSFERS
- ❖SECURE

Use cases:

- **Enterprise applications:** Amazon EFS provides the scalability, elasticity, availability, and durability to be the file store for enterprise applications and for applications delivered as a service. Its standard file system interface and file system semantics make it easy to migrate enterprise applications to the AWS cloud or to build new ones.
- **Media & entertainment workflows:** Media workflows like video editing, studio production, broadcast processing, sound design, and rendering often depend on shared storage to manipulate large files. Strong data consistency model with high throughput and shared file access can cut the time it takes to perform these jobs and consolidate multiple local file repositories into a single location for all users.
- **Analytics:** Amazon EFS provides the scale and performance required for big data applications that require high throughput to compute nodes coupled with read-after-write consistency and low-latency file operations. Many analytics workloads interact with data via a file interface, rely on file semantics such as file locks, and require the ability to write to portions of a file. Amazon EFS supports the needed file systems semantics and can scale capacity as well as performance.

Use cases:

- **Home directories:** Amazon EFS can provide storage for organizations that have many users that need to access and share common data sets. An administrator can use Amazon EFS to create a file system accessible to individuals across an organization and establish permissions for users and groups at the file or directory level.
- **Content management & web serving:** Amazon EFS can be used as a durable, high throughput file system for content management systems and web serving applications that store and serve information for a range of applications like web sites, online publications, and archives. Since Amazon EFS adheres to the expected file system semantics, file naming conventions, and permissions that web developers are accustomed to, it can easily integrate with web applications and can be used for a range of applications like web sites, online publications, and archives.

Use cases:

- **Software development tools:** Amazon EFS enables your organization to be more agile and responsive to customer needs. Provision, duplicate, scale, or archive your development, test, and production environments with a few clicks. With the ability to share code and other files in an organized way, shared cloud file storage with EFS provides an organized and secure repository that is easily accessible within their cloud development environments. Amazon EFS delivers a scalable and highly available solution that is ideal for testing and development workloads.
- **Database backups :** Amazon EFS presents a standard file system that can be easily mounted from database servers. They can be an ideal platform to create portable database backups using native application tools or enterprise backup applications. Many businesses want to take advantage of the flexibility of storing database backups in the cloud either for temporary protection during updates or for development and test.

Use cases:

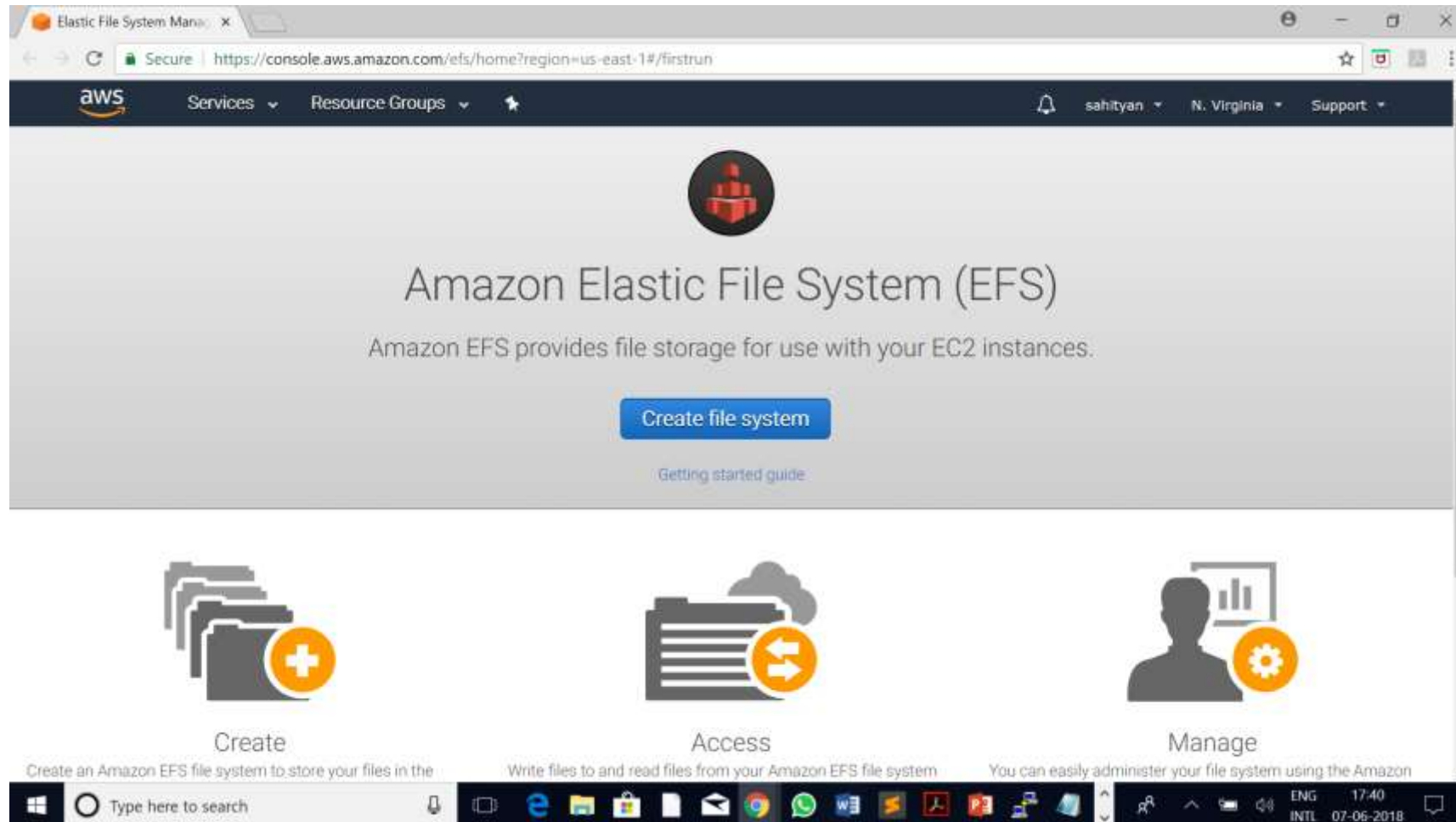
- **Container storage:** Containers are ideal for building microservices because they're quick to provision, easily portable, and provide process isolation. Containers that need access to the original data each time they start, require a shared file system that they can connect to regardless of which instance they're running on. Amazon efs provides persistent shared access to file data, which is ideal for container storage

LAB:

1. Create EC2 INSTANCES
2. Download , Install & Config httpd webserver
3. Code a index.html and deploy
4. Go to browse & check the website status
5. Create EFS & Mount on EC2 instance & Create index.html on document root(/var/www/html)

Creating Elastic File Systems

Services-→Storage → EFS



Creating Elastic File Systems

Click on “Create file system”
Select the default VPC and Click on “Next Step”
Add Server to security group

The screenshot shows the AWS Management Console interface for creating an Elastic File System. The browser address bar displays the URL: <https://console.aws.amazon.com/efs/home?region=us-east-1#/wizard/1>. The left sidebar shows the navigation pane with three steps: Step 1: Configure file system access (selected), Step 2: Configure optional settings, and Step 3: Review and create.

The main content area is titled "Configure file system access" and includes the following information:

- An Amazon EFS file system is accessed by EC2 instances running inside one of your VPCs. Instances connect to a file system by using a network interface called a mount target. Each mount target has an IP address, which we assign automatically or you can specify.
- A VPC dropdown menu is set to "vpc-86707cfe (default)".
- A section titled "Create mount targets" explains that instances connect to a file system by using mount targets you create. We recommend creating a mount target in each of your VPC's Availability Zones so that EC2 instances across your VPC can access the file system.
- A table lists the mount targets for three Availability Zones:

	Availability Zone	Subnet	IP address	Security groups
<input checked="" type="checkbox"/>	us-east-1a	subnet-a56049ee (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
<input checked="" type="checkbox"/>	us-east-1b	subnet-d43e5a89 (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
<input checked="" type="checkbox"/>	us-east-1c	subnet-2f0e564b (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server

The bottom of the image shows the Windows taskbar with the search bar and various application icons. The system tray in the bottom right corner displays the language as ENG, the time as 12:34, and the date as 08-06-2018.

Creating Elastic File Systems

Click on “Next”

The screenshot shows the AWS Management Console interface for creating an Elastic File System. The browser tabs at the top include 'Inbox - nekan...', 'EC2 Managemen...', 'Elastic File Syste...', 'IAM Managemen...', and 'EC2 Managemen...'. The address bar shows the URL 'https://console.aws.amazon.com/efs/home?region=us-east-1#/wizard/2'. On the left sidebar, there are three steps: 'Step 1: Configure file system access', 'Step 2: Configure optional settings' (which is highlighted with an orange bar), and 'Step 3: Review and create'. The main content area is titled 'Configure optional settings'. It includes a section for 'Add tags' with a table for key-value pairs. The first row has 'Name' as the key and 'MyFirstEFS' as the value. Below this is an 'Add New Key' button. Another section is titled 'Choose performance mode' with a text explanation and two radio button options: 'General Purpose (default)' (which is selected) and 'Max I/O'. At the bottom, there is a partially visible section for 'Enable encryption'.

Step 1: Configure file system access

Step 2: Configure optional settings

Step 3: Review and create

Configure optional settings

Add tags

You can add tags to describe your file system. A tag consists of a case-sensitive key-value pair. (For example, you can define a tag with key-value pair with key = Corporate Department and value = Sales and Marketing.) At a minimum, we recommend a tag with key = Name.

Key	Value	Remove
Name	MyFirstEFS	
Add New Key		

Choose performance mode

We recommend **General Purpose** performance mode for most file systems. **Max I/O** performance mode is optimized for applications where tens, hundreds, or thousands of EC2 instances are accessing the file system — it scales to higher levels of aggregate throughput and operations per second with a tradeoff of slightly higher latencies for file operations.

- ☒ General Purpose (default)
- ☐ Max I/O

Enable encryption

Creating Elastic File Systems

- ☒ General Purpose (default)
- ☐ Max I/O

Enable encryption

If you enable encryption for your file system, all data on your file system will be encrypted at rest. You can select a KMS key from your account to protect your file system, or you can provide the ARN of a key from a different account. Encryption of data at rest can only be enabled during file system creation. Encryption of data in transit is configured when mounting your file system. [Learn more](#)

☐ Enable encryption of data at rest

[Cancel](#)

[Previous](#)

[Next Step](#)

Click on “Next step”

Creating Elastic File Systems

Step 1: Configure file system access

Step 2: Configure optional settings

Step 3: Review and create

Review and create

Review the configuration below before proceeding to create your file system.

File system access

VPC	Availability Zone	Subnet	IP address	Security groups
vpc-86707cfe (default)	us-east-1a	subnet-a56049ee (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
	us-east-1b	subnet-d43e5a89 (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
	us-east-1c	subnet-2f0e564b (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
	us-east-1d	subnet-4a721265 (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
	us-east-1e	subnet-e10770de (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server
	us-east-1f	subnet-7aee1d75 (default)	Automatic	sg-1f1f336b - default sg-26dfc76e - Server

Optional settings

Tags

Name: MyFirstEFS

Windows Taskbar: Type here to search, ENG INTL, 12:49, 08-06-2018

Creating Elastic File Systems

Optional settings

Tags

Performance mode

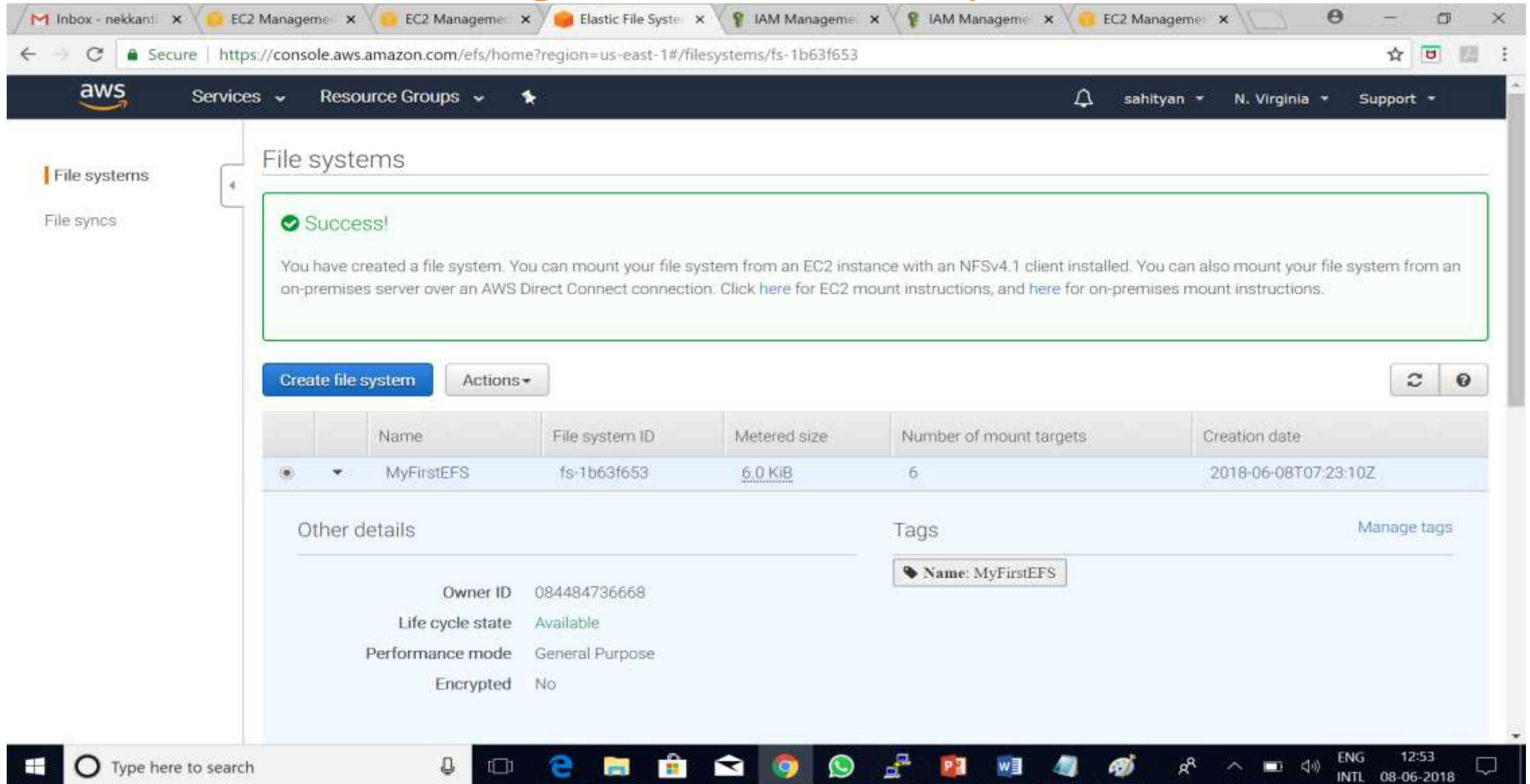
Encrypted

[Cancel](#) [Previous](#) [Create File System](#)

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Click on Create File System

Creating Elastic File Systems



The screenshot displays the AWS Management Console interface for the 'Elastic File System' service. The browser's address bar shows the URL: `https://console.aws.amazon.com/efs/home?region=us-east-1#/filesystems/fs-1b63f653`. The console header includes the AWS logo, navigation links for 'Services' and 'Resource Groups', and user information for 'sahityan' in the 'N. Virginia' region. On the left sidebar, 'File systems' is selected. The main content area features a green success message: 'Success! You have created a file system. You can mount your file system from an EC2 instance with an NFSv4.1 client installed. You can also mount your file system from an on-premises server over an AWS Direct Connect connection. Click [here](#) for EC2 mount instructions, and [here](#) for on-premises mount instructions.' Below this message are buttons for 'Create file system' and 'Actions'. A table lists the created file system:

Name	File system ID	Metered size	Number of mount targets	Creation date
MyFirstEFS	fs-1b63f653	6.0 KiB	6	2018-06-08T07:23:10Z

Below the table, the 'Other details' section shows the following attributes:

- Owner ID: 084484736668
- Life cycle state: Available
- Performance mode: General Purpose
- Encrypted: No

The 'Tags' section shows a single tag: 'Name: MyFirstEFS'. The Windows taskbar at the bottom indicates the system time is 12:53 on 08-06-2018.

Creating Elastic File Systems

Inbox - nekkantl x EC2 Managemer x EC2 Managemer x Elastic File Syste x IAM Managemer x IAM Managemer x EC2 Managemer x

Secure | https://console.aws.amazon.com/efs/home?region=us-east-1#/filesystems/fs-1b63f653

DNS name fs-1b63f653.efs.us-east-1.amazonaws.com ?

[Amazon EC2 mount instructions](#)
[AWS Direct Connect mount instructions](#)

Mount targets

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-86707cfe (default)	us-east-1e	subnet-e10770de (default)	172.31.50.172	fsmt-20b7d668	eni-59304560		Creating
	us-east-1d	subnet-4a721265 (default)	172.31.95.28	fsmt-22b7d66a	eni-1bfb208d		Creating
	us-east-1f	subnet-7aee1d75 (default)	172.31.71.161	fsmt-24b7d66c	eni-c27c3167		Creating
	us-east-1c	subnet-2f0e564b (default)	172.31.0.48	fsmt-26b7d66e	eni-364090b4		Creating
	us-east-1a	subnet-a56049ee (default)	172.31.28.208	fsmt-2eb7d666	eni-bbae512b		Creating
	us-east-1b	subnet-d43e5a89 (default)	172.31.45.56	fsmt-2fb7d667	eni-1592498f		Creating

Feedback English (US)

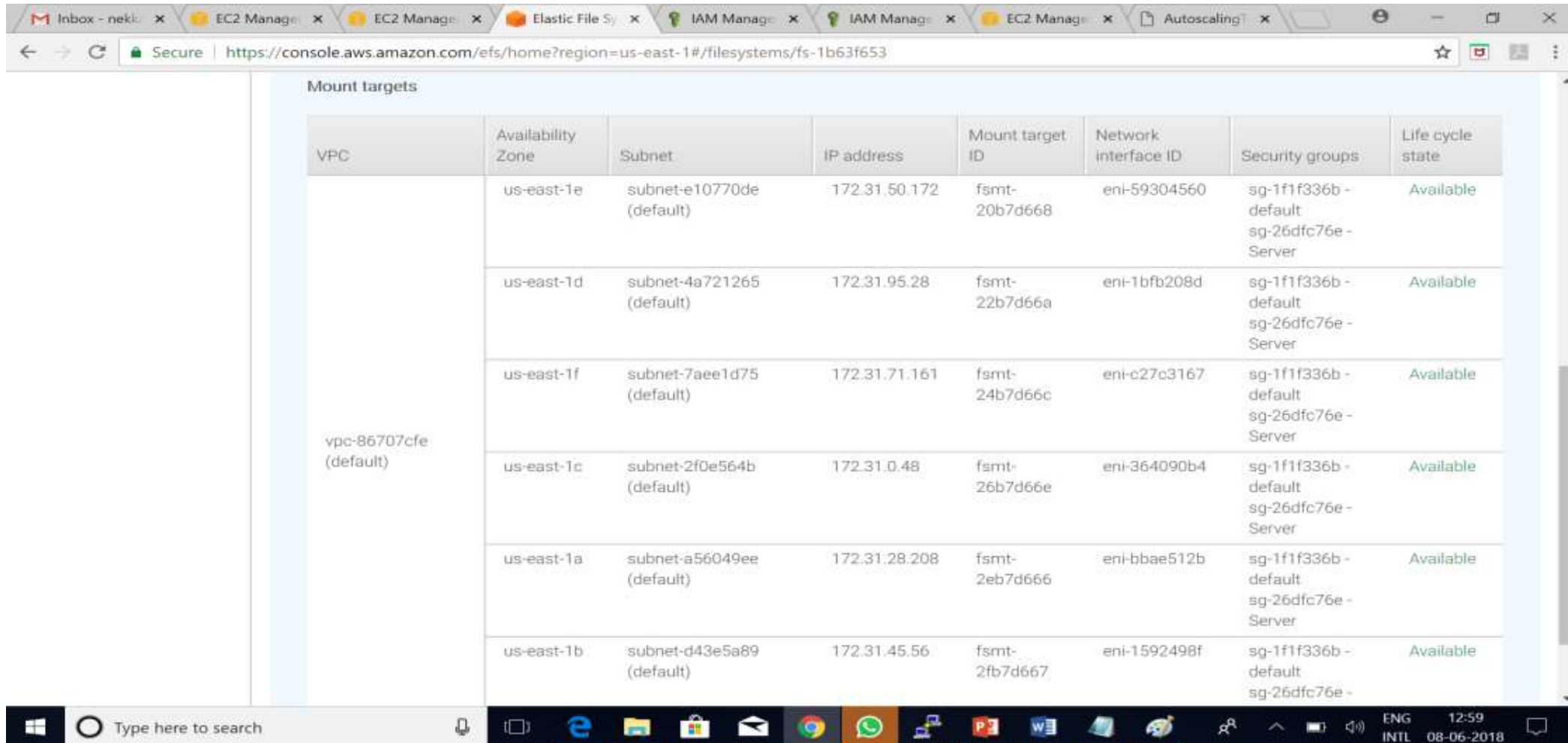
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Type here to search

ENG INTL 12:55 08-06-2018

Creating Elastic File Systems

Wait until Life cycle state changed to available



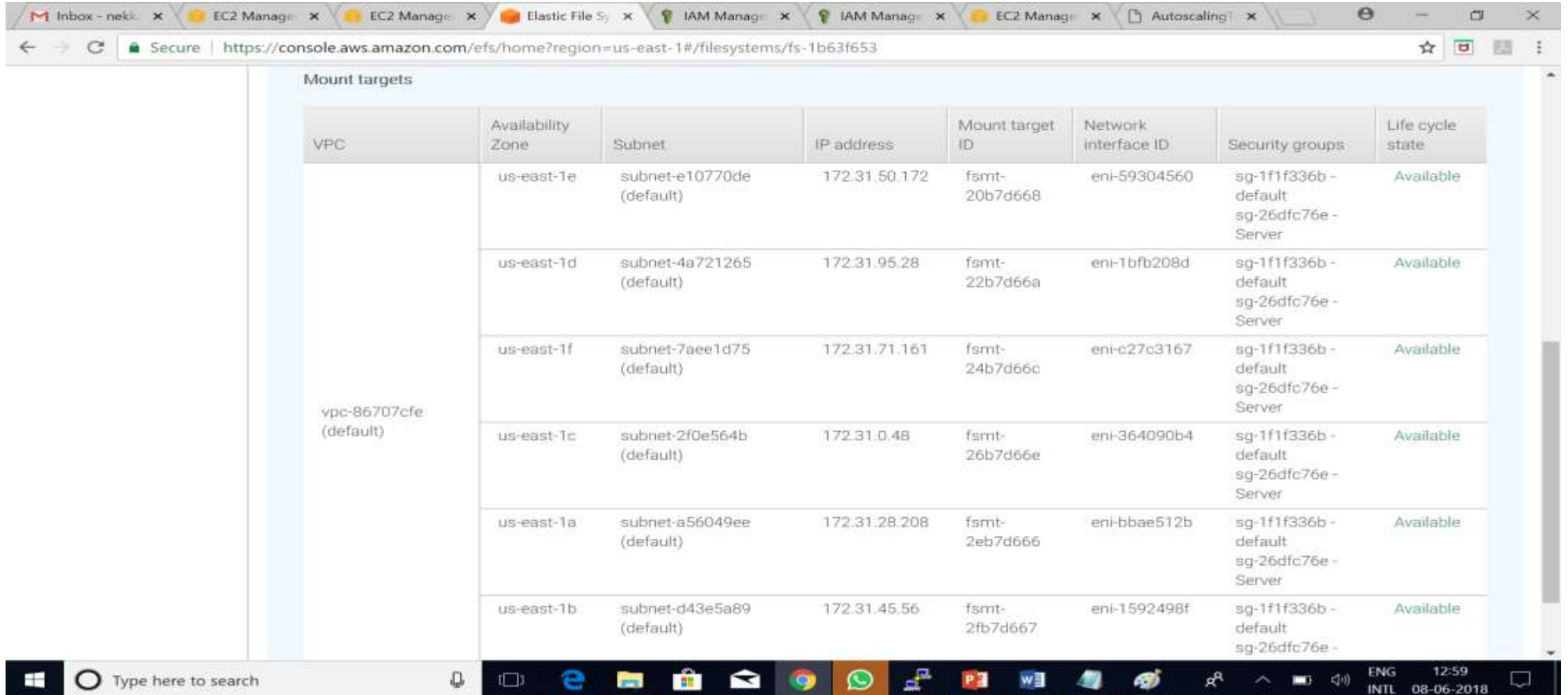
The screenshot displays the AWS Management Console interface for an Elastic File System (EFS). The browser address bar shows the URL: <https://console.aws.amazon.com/efs/home?region=us-east-1#/filesystems/fs-1b63f653>. The page title is "Mount targets". Below the title is a table listing the mount targets for the file system.

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-86707cfe (default)	us-east-1e	subnet-e10770de (default)	172.31.50.172	fsmt-20b7d668	eni-59304560	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1d	subnet-4a721265 (default)	172.31.95.28	fsmt-22b7d66a	eni-1bfb208d	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1f	subnet-7aee1d75 (default)	172.31.71.161	fsmt-24b7d66c	eni-c27c3167	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1c	subnet-2f0e564b (default)	172.31.0.48	fsmt-26b7d66e	eni-364090b4	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1a	subnet-a56049ee (default)	172.31.28.208	fsmt-2eb7d666	eni-bbae512b	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1b	subnet-d43e5a89 (default)	172.31.45.56	fsmt-2fb7d667	eni-1592498f	sg-1f1f336b - default sg-26dfc76e -	Available

The Windows taskbar at the bottom shows the search bar with the text "Type here to search" and various application icons. The system tray on the right indicates the language is "ENG INTL", the date is "08-06-2018", and the time is "12:59".

Creating Elastic File Systems

Wait until Life cycle state changed to available



The screenshot shows the AWS Management Console interface for an Elastic File System. The browser tabs include 'Inbox - neki', 'EC2 Manage', 'Elastic File Sy', 'IAM Manage', and 'Autoscaling'. The address bar shows the URL: <https://console.aws.amazon.com/efs/home?region=us-east-1#/filesystems/fs-1b63f653>. The main content area is titled 'Mount targets' and displays a table with the following data:

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-86707cfe (default)	us-east-1e	subnet-e10770de (default)	172.31.50.172	fsmt-20b7d668	eni-59304560	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1d	subnet-4a721265 (default)	172.31.95.28	fsmt-22b7d66a	eni-1bfb208d	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1f	subnet-7aee1d75 (default)	172.31.71.161	fsmt-24b7d66c	eni-c27c3167	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1c	subnet-2f0e564b (default)	172.31.0.48	fsmt-26b7d66e	eni-364090b4	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1a	subnet-a56049ee (default)	172.31.28.208	fsmt-2eb7d666	eni-bbae512b	sg-1f1f336b - default sg-26dfc76e - Server	Available
	us-east-1b	subnet-d43e5a89 (default)	172.31.45.56	fsmt-2fb7d667	eni-1592498f	sg-1f1f336b - default sg-26dfc76e -	Available

The Windows taskbar at the bottom shows the search bar with the text 'Type here to search' and various application icons including Edge, File Explorer, Mail, Chrome, WhatsApp, and others. The system tray on the right indicates the language is 'ENG INTL', the time is '12:59', and the date is '08-06-2018'.