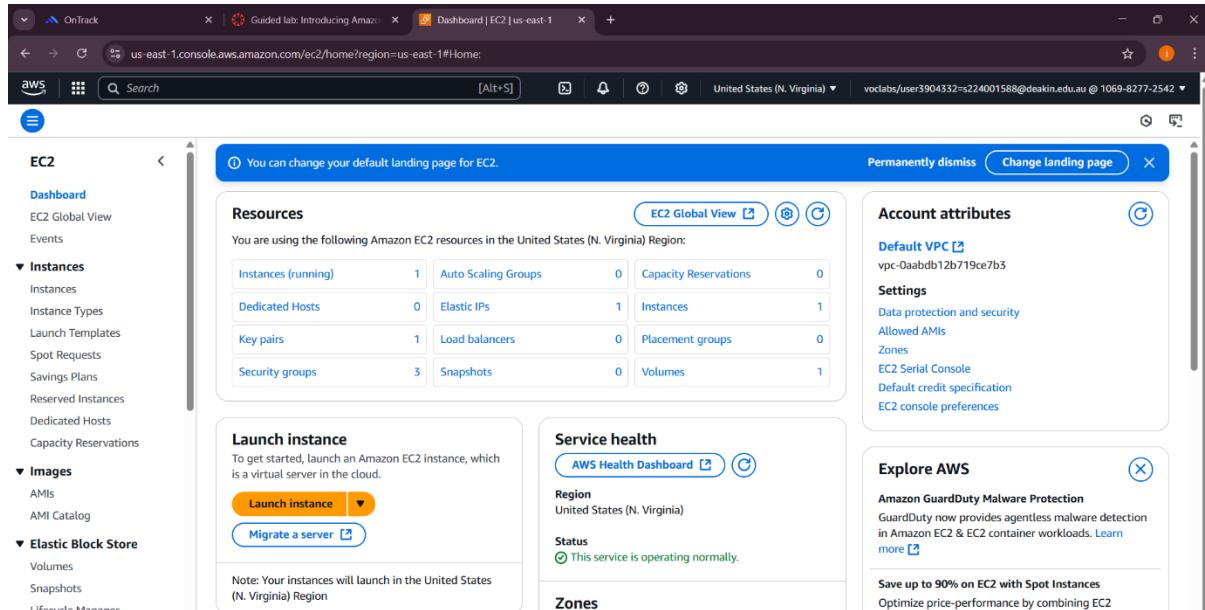


**TASK 3.1P****CLOUD COMPUTING*****Introducing Amazon Elastic File System*****Task 1: Creating a security group to access your EFS file system**


The screenshot shows the AWS EC2 Dashboard. On the left, a sidebar navigation includes: Dashboard, Instances (with sub-options like Instances, Instance Types, Launch Templates, etc.), Images, and Elastic Block Store (with sub-options like Volumes, Snapshots, Lifecycle Manager). The main content area displays the following sections:

- Resources:** Shows a summary of running instances (1), Auto Scaling Groups (0), Capacity Reservations (0), Dedicated Hosts (0), Elastic IPs (1), Key pairs (1), Load balancers (0), Security groups (3), Instances (1), Placement groups (0), Snapshots (0), and Volumes (1).
- Launch instance:** A button to "Launch instance".
- Service health:** Shows the AWS Health Dashboard, indicating the service is operating normally.
- Account attributes:** Details the Default VPC (vpc-0aabdb12b719ce7b3) and other settings like Data protection and security, Allowed AMIs, Zones, EC2 Serial Console, Default credit specification, and EC2 console preferences.
- Explore AWS:** Information about Amazon GuardDuty Malware Protection, showing it now provides agentless malware detection in Amazon EC2 & EC2 container workloads.

**Security Groups (3) Info:** A table listing three security groups:

| Name      | Security group ID    | Security group name | VPC ID                 | Description      |
|-----------|----------------------|---------------------|------------------------|------------------|
| -         | sg-087f5578ed06048f7 | default             | vpc-0aabdb12b719ce7b3  | default VPC sec. |
| -         | sg-0e496d3e5b2eb044  | default             | vpc-02c63f6fe0e25667cb | default VPC sec. |
| EFSClient | sg-0dd1513d9dbffac99 | EFSClient           | vpc-02c63f6fe0e25667cb | EFS Client       |

The screenshot shows two browser windows side-by-side, both displaying the AWS EC2 Security Groups interface.

**Top Window (Create security group):**

- Basic details:**
  - Security group name**: EFS Mount Target
  - Description**: Inbound NFS access from EFS clients
  - VPC**: vpc-02c63f6f0e25667cb (Lab VPC)
- Inbound rules**: This security group has no inbound rules. A blue "Add rule" button is visible.
- Outbound rules**: A table showing one outbound rule:
 

| Type        | Info                | Protocol | Info | Port range | Info   | Destination | Info   | Description - optional              | Info                 |
|-------------|---------------------|----------|------|------------|--------|-------------|--------|-------------------------------------|----------------------|
| All traffic | CloudShell Feedback | All      | All  | Custom     | Search | Custom      | Search | Inbound NFS access from EFS clients | sg-079387d0cdc118ed3 |

**Bottom Window (Security Group Details):**

- Details:**
  - Security group name**: EFS Mount Target
  - Security group ID**: sg-079387d0cdc118ed3
  - Description**: Inbound NFS access from EFS clients
  - Owner**: 106982772542
  - Inbound rules count**: 1 Permission entry
  - Outbound rules count**: 1 Permission entry
- Inbound rules (1):**

| Name | Security group rule ID | IP version | Type | Protocol | Port range |
|------|------------------------|------------|------|----------|------------|
| -    | sgr-07f7da9067a8faa2a  | -          | NFS  | TCP      | 2049       |

## Task 2: Creating an EFS file system

The screenshot shows a Microsoft Edge browser window with the AWS EFS console URL: [us-east-1.console.aws.amazon.com/efs/home?region=us-east-1#/get-started](https://us-east-1.console.aws.amazon.com/efs/home?region=us-east-1#/get-started). The page title is "Amazon Elastic File System". The main content area features a large heading "Amazon Elastic File System" and a sub-heading "Scalable, elastic, cloud-native NFS file system". Below this is a brief description of Amazon EFS. To the right, there's a "Create file system" button. A modal window titled "Pricing" is open, containing text about EFS pricing and a link to the AWS Pricing Calculator. The left sidebar has a "File systems" section and links to AWS Backup, AWS DataSync, and AWS Transfer. The bottom navigation bar includes CloudShell, Feedback, and various system icons.

The screenshot shows the AWS EFS File System Settings page across three horizontal sections.

**General (Step 1):**

- Name - optional:** Name your file system. *Optional. Apply a name to your file system*
- File system type:** Choose to either store data across multiple Availability Zones or within a single Availability Zone.
  - Regional**: Offers the highest levels of availability and durability by storing file system data across multiple Availability Zones within an AWS Region.
  - One Zone**: Provides continuous availability to data within a single Availability Zone within an AWS Region.
- Automatic backups:** Automatically backup your file system data with AWS Backup using recommended settings. Additional pricing applies. [Learn more](#)
- Enable automatic backups**

**Lifecycle management (Step 2):**

- Transition into Infrequent Access (IA)**: Transition files to IA based on the time since they were last accessed in Standard storage.
  - None**
  - 90 day(s) since last access**
- Transition into Archive**: Transition files to Archive based on the time since they were last accessed in Standard storage.
  - None**
- Transition into Standard**: Transition files back to Standard storage based on when they are first accessed in IA or Archive storage.
  - None**

**Encryption:** Choose to enable encryption of your file system's data at rest. Uses the AWS KMS service key (aws/elasticfilesystem) by default. [Learn more](#)

**Enable encryption of data at rest**

**Performance settings (Step 3 - optional):**

**Network access**

**Network**

**Virtual Private Cloud (VPC)** [Learn more](#) Choose the VPC where you want EC2 instances to connect to your file system.

|                   |                     |            |  |
|-------------------|---------------------|------------|--|
| Availability zone | Subnet ID           | IP address | Security groups  |
| us-east-1a        | subnet-01896dec...  | Automatic  | Choose security gro...<br>sg-087f5578ed06048f7 default |
| us-east-1b        | subnet-092969268... | Automatic  | Choose security gro...<br>sg-087f5578ed06048f7 default |

**Mount targets**

A mount target provides an NFSv4 endpoint at which you can mount an Amazon EFS file system. We recommend creating one mount target per Availability Zone. [Learn more](#)

|                   |                      |            |   |
|-------------------|----------------------|------------|---|
| Availability zone | Subnet ID            | IP address | Security groups                                       |
| us-east-1a        | subnet-02e39b8a8...  | Automatic  | Choose security gro...<br>sg-02c63f60e25667cb Lab VPC |
| us-east-1b        | subnet-06fdc1c1af... | Automatic  | Choose security gro...                                |

**Add mount target**

**Cancel** **Previous** **Next**

**Step 1: File system settings**

**File system**

| Field                | Value  | Is editable? |
|----------------------|--|--------------|
| Name                 | -  | Yes          |
| Performance mode     | General Purpose  | No           |
| Throughput mode      | Elastic  | Yes          |
| Encrypted            | Yes  | No           |
| KMS Key ID           | -  | No           |
| Lifecycle management | Transition into Infrequent Access (IA):None<br>Transition into Archive: 90 day(s) since last access<br>Transition into Standard:None | Yes          |
| Automatic backups    | No   | Yes          |
| VPC ID               | vpc-02c63f6f0e25667cb (Lab VPC)  | Yes          |
| Availability Zone    | Regional   | No           |

**Tags**

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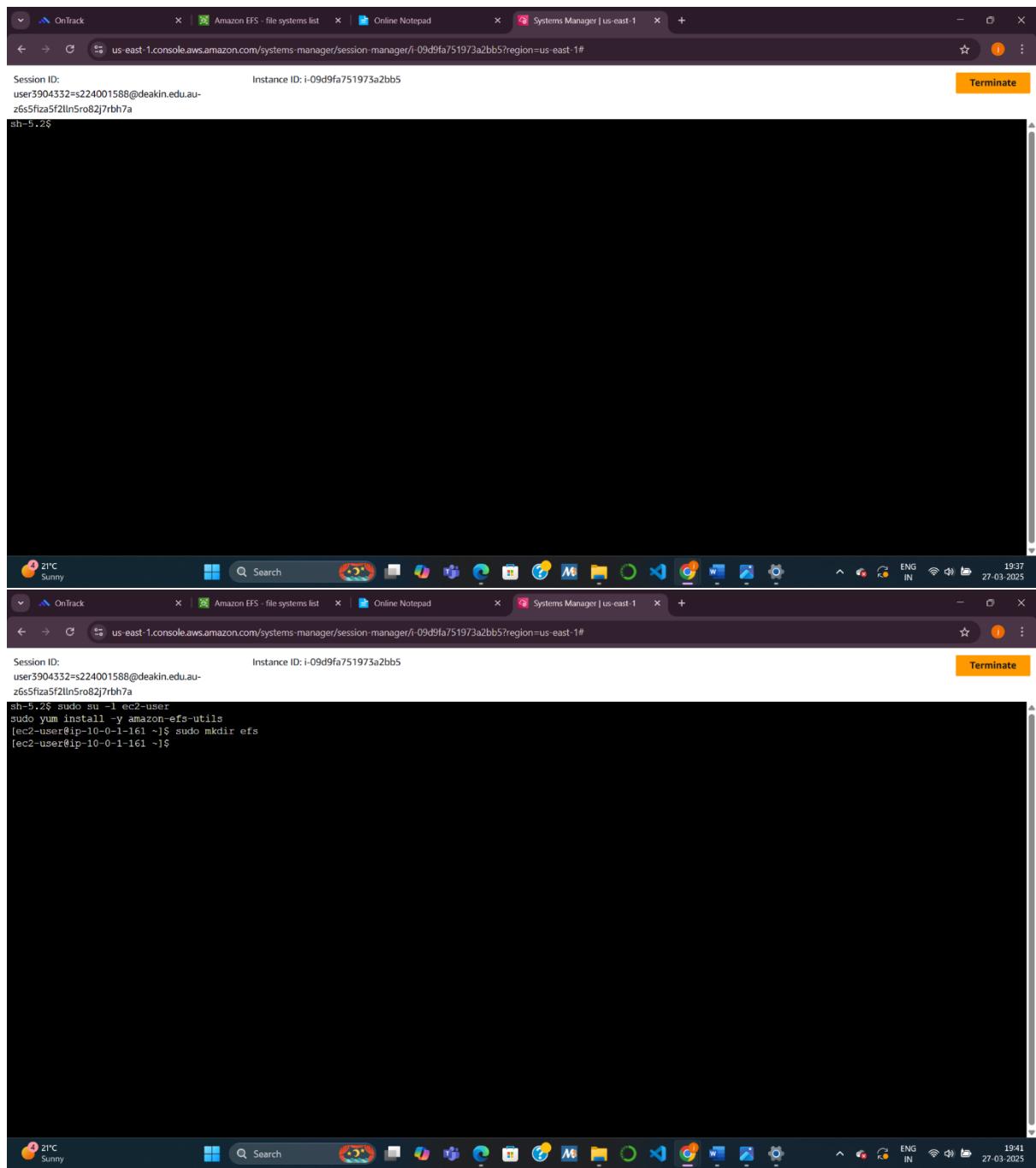
**Elastic File System**

**File systems (1)**

| Name                     | File system ID      | Encrypted | Total size | Size in Standard | Size in IA | Size in Archive | Provisioned Throughput (MiB/s) |
|--------------------------|---------------------|-----------|------------|------------------|------------|-----------------|--------------------------------|
| My First EFS File System | fs-0c004fc167da6bcb | Encrypted | 0 Bytes    | 0 Bytes          | 0 Bytes    | 0 Bytes         | -                              |

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### Task 3: Connecting to your EC2 instance



The image shows a Windows desktop environment with two terminal windows open. Both windows are titled "Systems Manager | us-east-1" and have the URL "us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-09d9fa751973a2bb5?region=us-east-1#". The top window has a black background and displays the command "sh-5.2\$". The bottom window has a white background and displays the command "sh-5.2\$ sudo su -l ec2-user". Below the windows is a taskbar with various icons, including a weather icon showing "21°C Sunny", a search bar, and system status indicators like battery level and signal strength.

```
Session ID: user3904332=s224001588@deakin.edu.au-z6s5fiza5f2ln5ro82j7rbh7a
Instance ID: i-09d9fa751973a2bb5
sh-5.2$  
  
Session ID: user3904332=s224001588@deakin.edu.au-z6s5fiza5f2ln5ro82j7rbh7a
Instance ID: i-09d9fa751973a2bb5
sh-5.2$ sudo su -l ec2-user
sudo yum install -y amazon-efs-utils
[ec2-user@ip-10-0-1-161 ~]$ sudo mkdir efs
[ec2-user@ip-10-0-1-161 ~]$
```

#### Task 4: Creating a new directory and mounting the EFS file system

The screenshot shows the AWS CloudShell interface. The main window displays the configuration details for a file system named "My First EFS File System (fs-0c004fc1d167da6bcb)". The "General" tab is selected, showing the following configuration:

- Amazon resource name (ARN): arn:aws:elasticfilesystem:us-east-1:106982772542:file-system/fs-0c004fc1d167da6bcb
- Automatic backups: Disabled
- Encrypted: Yes (c561222b-7729-4f79-be3a-49d46cc042a8)
- File system state: Available
- DNS name: fs-0c004fc1d167da6bcb.efs.us-east-1.amazonaws.com
- Replication overwrite protection: Enabled

The sidebar on the left lists other services like AWS Backup, AWS DataSync, and AWS Transfer. The bottom status bar shows the date (27-03-2025) and time (19:41). The desktop taskbar at the bottom includes icons for CloudShell, Feedback, Search, and various application icons.

The screenshot shows the AWS Systems Manager session terminal. The terminal window displays the following command history:

```
Session ID: i-09d9fa751973a2bb5
Instance ID: i-09d9fa751973a2bb5
user@ip-10-0-1-161 ~]$ sudo su -l ec2-user
[ec2-user@ip-10-0-1-161 ~]$ sudo yum install -y amazon-efs-utils
[ec2-user@ip-10-0-1-161 ~]$ sudo mkdir efs
[ec2-user@ip-10-0-1-161 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-0c004fc1d167da6bcb.efs.us-east-1.amazonaws.com:/efs /efs
[ec2-user@ip-10-0-1-161 ~]$
```

The terminal window has a "Terminate" button in the top right corner. The bottom status bar shows the date (27-03-2025) and time (19:44). The desktop taskbar at the bottom includes icons for CloudShell, Feedback, Search, and various application icons.

```

Session ID: Instance ID: i-09d9fa751973a2bb5
user3904332=s224001588@deakin.edu.au-z65fiza5f2ln5ro82j7rbh7a
sh-5.2$ sudo su -l ec2-user
sudo yum install -y amazon-efs-utils
[ec2-user@ip-10-0-1-161 ~]$ sudo mkdir efs
[ec2-user@ip-10-0-1-161 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-0c004fcfd167da6bcb.efs.us-east-1.amazonaws.com:/efs
[ec2-user@ip-10-0-1-161 ~]$ sudo df -hT
Filesystem           Type      Size   Used  Avail Use% Mounted on
/devtmpfs            devtmpfs  4.0M    0B  4.0M  0% /dev
tmpfs               tmpfs     475M   0B  475M  0% /dev/shm
tmpfs               tmpfs     190M  452K 190M  1% /run
/dev/xvda1           xfs      8.0G  1.6G  6.4G  20% /
tmpfs               tmpfs     475M   0B  475M  0% /tmp
/dev/xvda128          vfat    10M  1.3M  8.7M  13% /boot/efi
tmpfs               tmpfs     95M   0B  95M  0% /run/user/0
fs-0c004fcfd167da6bcb.efs.us-east-1.amazonaws.com:/ nfs4    8.0E   0B  8.0E  0% /home/ec2-user/efs
[ec2-user@ip-10-0-1-161 ~]$ 

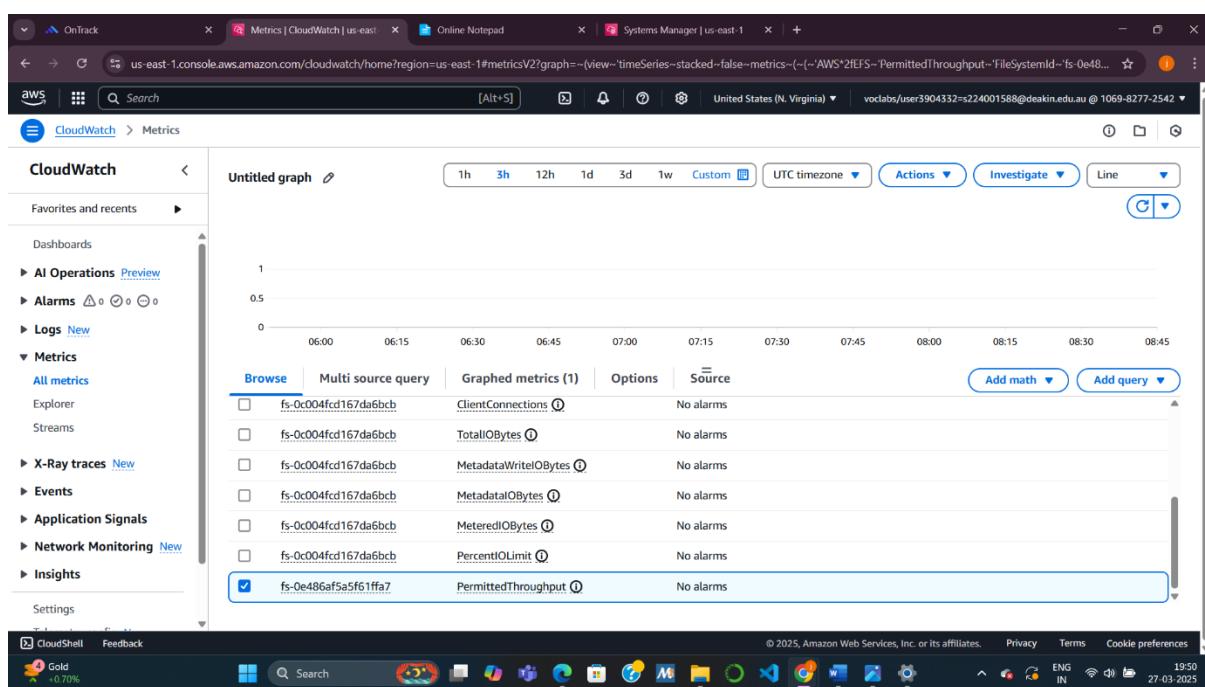
Session ID: Instance ID: i-09d9fa751973a2bb5
user3904332=s224001588@deakin.edu.au-z65fiza5f2ln5ro82j7rbh7a
sh-5.2$ sudo su -l ec2-user
sudo yum install -y amazon-efs-utils
[ec2-user@ip-10-0-1-161 ~]$ sudo mkdir efs
[ec2-user@ip-10-0-1-161 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-0c004fcfd167da6bcb.efs.us-east-1.amazonaws.com:/efs
[ec2-user@ip-10-0-1-161 ~]$ sudo df -hT
Filesystem           Type      Size   Used  Avail Use% Mounted on
/devtmpfs            devtmpfs  4.0M    0B  4.0M  0% /dev
tmpfs               tmpfs     475M   0B  475M  0% /dev/shm
tmpfs               tmpfs     190M  452K 190M  1% /run
/dev/xvda1           xfs      8.0G  1.6G  6.4G  20% /
tmpfs               tmpfs     475M   0B  475M  0% /tmp
/dev/xvda128          vfat    10M  1.3M  8.7M  13% /boot/efi
tmpfs               tmpfs     95M   0B  95M  0% /run/user/0
fs-0c004fcfd167da6bcb.efs.us-east-1.amazonaws.com:/ nfs4    8.0E   0B  8.0E  0% /home/ec2-user/efs
[ec2-user@ip-10-0-1-161 ~]$ sudo fio-efs --filename=/efs/fio-efs-test.img --bs=1M --nrfiles=1 --direct=1 --sync=0 --rw=write --iodepth=200 --ioengine=libaio
fio-efs: (g=0): rw=write, bs=(R) 1024KiB-1024KiB, (W) 1024KiB-1024KiB, (T) 1024KiB-1024KiB, ioengine=libaio, iodepth=200
fio-efs: 1 process
Starting 1 process
fio-efs: Laying out IO file (1 file / 10240MiB)
Jobs: 1 (F=1): [W(1)] (30.6%) [w=120MiB/s] [w=120 IOPS] [eta 00m:59s]

Session ID: Instance ID: i-09d9fa751973a2bb5
user3904332=s224001588@deakin.edu.au-z65fiza5f2ln5ro82j7rbh7a
sh-5.2$ 20°C Sunny
ENG IN 1945 27-03-2025

```

### Task 5: Examining the performance behavior of your new EFS file system

The screenshot shows the AWS CloudWatch Overview page. The left sidebar includes sections for Dashboards, AI Operations, Alarms, Logs, Metrics, X-Ray traces, Events, Application Signals, Network Monitoring, Insights, and Settings. The main content area features a "Get started with CloudWatch" section with four cards: "Create alarms", "Create a default dashboard", "View logs", and "View events". Below this is a "Get started with Observability solutions" section with three cards: "Reliable observability solutions tailored to specific workloads and use cases", "Available in Amazon native and open-source platforms", and "Simplify the process of instrumenting and gaining insights into your workloads". The top navigation bar shows tabs for Ontrack, CloudWatch, Online Notepad, and Systems Manager.



Guided lab: Introducing Amazon Elastic File System (Amazon EFS)

Home Modules Discussions Grades Lucid (Whiteboard)

AWS 00:54 Start Lab End Lab AWS Details Details

EN\_US Total score 15/15

[Task 1] Security Group created 5/!

[Task 2] EFS file system created 5/!

[Task 5] Flexible IO was run 5/!

Submit Submission Report Grades

Submission Mar 26 at 3:33pm Submission Details Grade: 10 (15 pts possible) Graded Anonymously: no Comments: No Comments

20°C Mostly cloudy ENG IN 19:57 27-03-2025

## KNOWLEDGE CHECK :

Module 5 Knowledge Check

Home Modules Discussions Grades Lucid (Whiteboard)

Due No Due Date Points 100 Submitting an external tool

KEYBOARD NAVIGATION

Knowledge check results

Your score: 90% (90 points)  
Required score: 70% (70 points)

Result: Congratulations! You have completed this knowledge check.

To continue, choose Next in the lower-right corner.

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Submission Mar 27 at 9:20am Submission Details Grade: 80 (100 pts possible) Graded Anonymously: no Comments: No Comments

Temps to drop Saturday ENG IN 20:29 27-03-2025