

INTRODUCTION TO CLOUD COMPUTING

Lab Task 06 (Implement Monitoring)

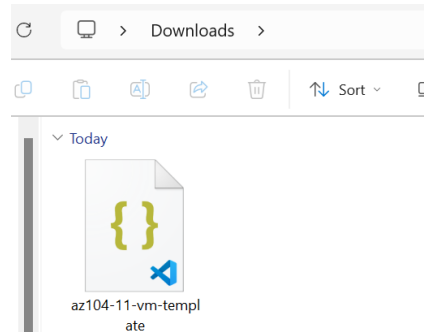
Name: Ariha Zainab

ID: 2280138

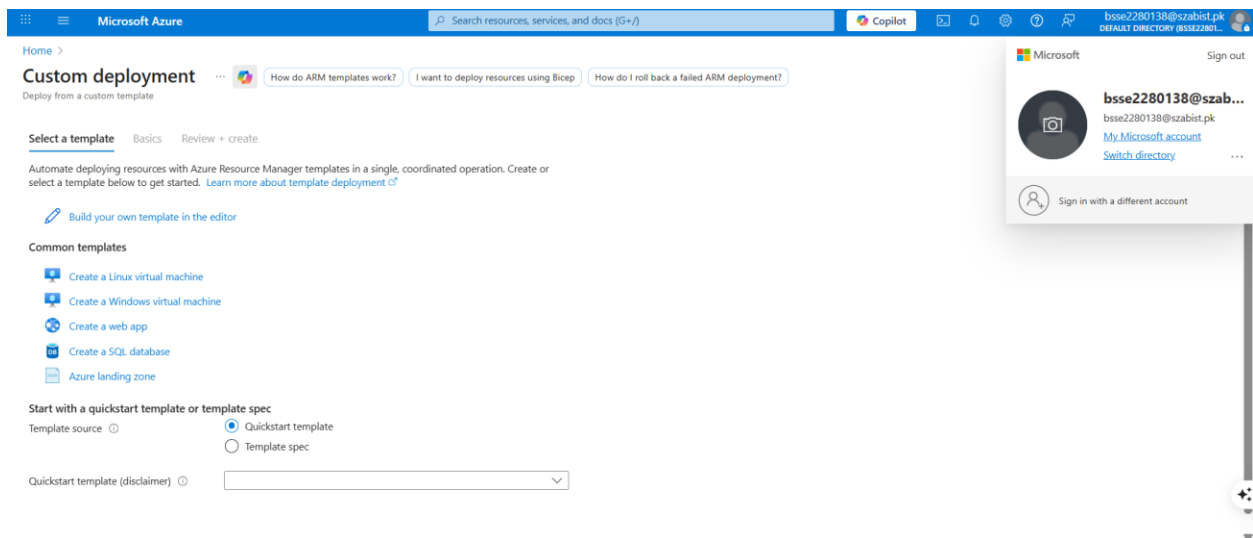
Section: SE 7-B

Task 1: Use a template to provision an infrastructure

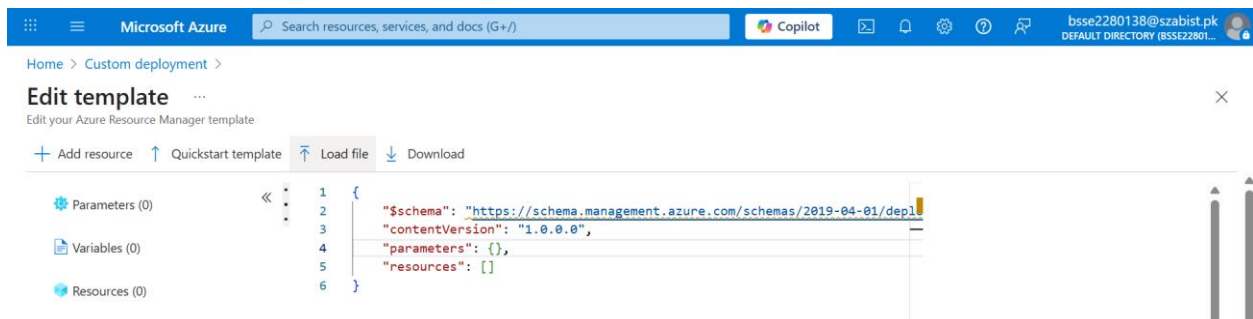
- **Download VM Template File:**



- **Deploy a Custom Template in Azure Portal:**

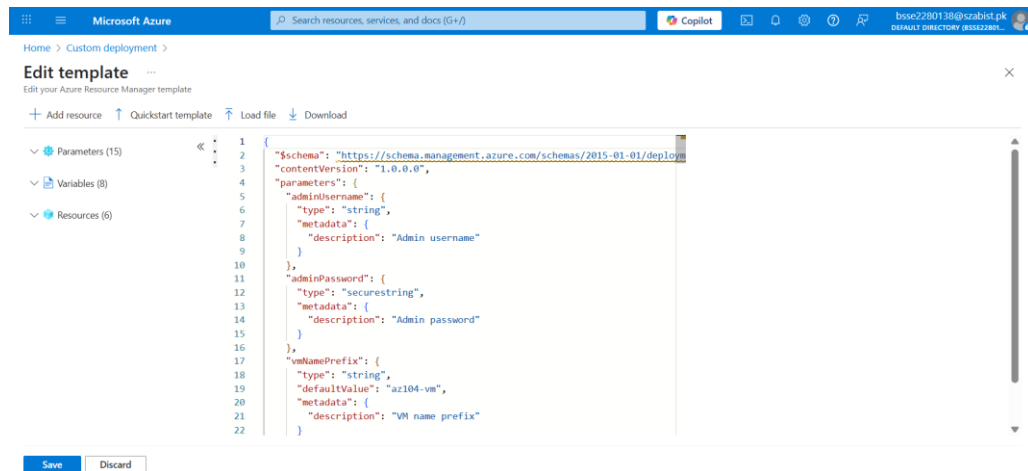


- **Load Template File in Editor & Save Template:**

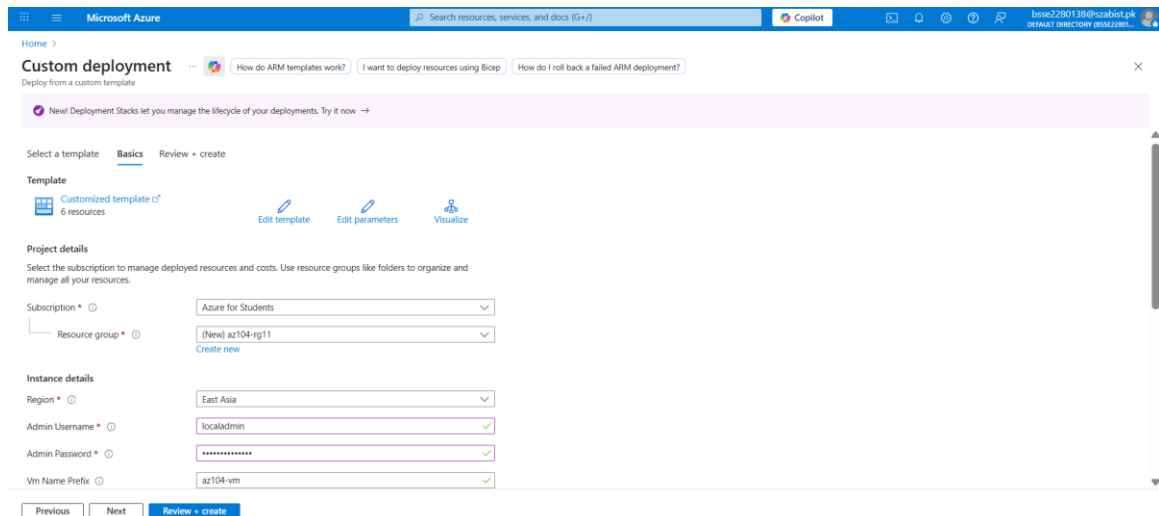


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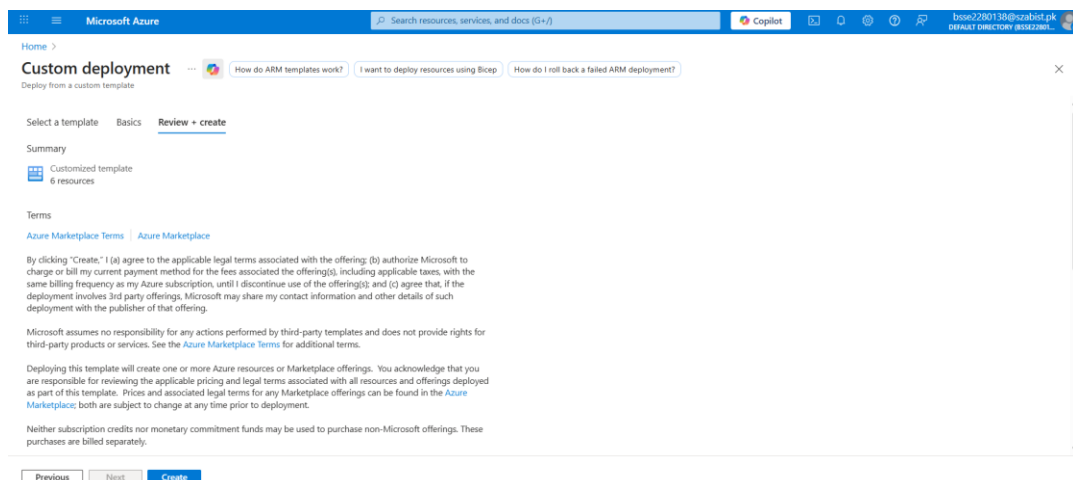
Lab Task 06 (Implement Monitoring)



- **Custom Deployment Configuration (Subscription, Resource Group, VM Credentials):**



- **Review + Create Validation:**



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Lab Task 06 (Implement Monitoring)

• Deployment Successful – Go to Resource Group:

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

bsse2280138@szabist.pk
DEFAULT DIRECTORY (BSSE22801...)

Home > Microsoft.Template-2026011211145 | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

Deployment name : Microsoft.Template-2026011211145 Start time : 1/11/2026, 9:12:01 PM

Subscription : Azure for Students Correlation ID : 2158c2b1-6c6b-4344-bf69-66a0708dec42

Resource group : az104-rg11

> Deployment details

< Next steps

Go to resource group

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

Microsoft Defender for Cloud

• Review Deployed Resources (VM and Virtual Network):

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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DEFAULT DIRECTORY (BSSE22801...)

Home > Microsoft.Template-2026011211145 | Overview

az104-rg11 Resource group

Export resource groups using Bicep or Terraform

How to manage changes with deployment tools?

How to manage these changes more efficiently with deployment tools?

Search

Create Manage view Delete resource group Refresh Export to CSV Open query Assign tags Move Group by none

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Cost Management

Monitoring

Automation

Help

Essentials

Resources Recommendations

Filter for any field... Type equals all Location equals all Add filter

Name	Type	Location
az104-nic0	Network Interface	East Asia
az104-nsg01	Network security group	East Asia
az104-plip0	Public IP address	East Asia
az104-vm0	Virtual machine	East Asia
az104-vm0_disk1_3bdc6a55f45946e8ed7cf8733045da1	Disk	East Asia
az104-vnet	Virtual network	East Asia
az10411clqhqu/vriak	Storage account	East Asia

• Configure VM Insights in Azure Monitor:

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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DEFAULT DIRECTORY (BSSE22801...)

Home > Monitor

Monitor | Virtual Machines

Search

Refresh Provide Feedback

Get started Overview Performance Map

Monitor the health and performance of virtual machines

VM insights monitors the performance and health of your virtual machines and virtual machine scale sets, including their running processes and dependencies on other resources. It can help deliver predictable performance and availability of vital applications by identifying performance bottlenecks and network issues. [Learn more](#)

Enable VM Insights

Implement complete monitoring of your Azure and hybrid virtual machine environment. [Learn more](#)

Configure Insights

Analyze data

Analyze the health and performance for a single machine or multiple machines and drill into logs for troubleshooting. [Learn more](#)

Analyze data

Create alerts

Alerts in Azure Monitor proactively notify you of interesting data and patterns in your monitoring data and potentially take automated actions based on triggers. [Learn more](#)

Overview

Activity log

Alerts

Issues (preview)

Metrics

Logs

Change Analysis

Service health

Workbooks

Dashboards with Grafana

Insights

Applications

Virtual Machines

Storage accounts

Containers

Networks

Azure Cosmos DB

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Lab Task 06 (Implement Monitoring)

- **Enable Monitoring for the Virtual Machine:**

Microsoft Azure

Home > Monitor

Monitor | Virtual Machines

Get started Overview Performance Map

Filter by name... Subscription: Azure for Students Resource group: All resource groups Type: All types Location: All locations

Group by: Subscription, Resource group

Onboarding now supports OpenTelemetry metrics. If you enable only OpenTelemetry metrics, your VM will still collect data but will not appear as 'Monitored' in this view. [Learn more](#)

Monitored (0)	Not monitored (1)	Workspace configuration	Other onboarding options												
	<table><thead><tr><th>Name</th><th>Monitor Coverage</th><th>Workspace</th></tr></thead><tbody><tr><td>Azure for Students</td><td>1 of 1</td><td></td></tr><tr><td>az104-rg11</td><td>1 of 1</td><td></td></tr><tr><td>az104-vm0</td><td>Not enabled</td><td>Enable</td></tr></tbody></table>	Name	Monitor Coverage	Workspace	Azure for Students	1 of 1		az104-rg11	1 of 1		az104-vm0	Not enabled	Enable		
Name	Monitor Coverage	Workspace													
Azure for Students	1 of 1														
az104-rg11	1 of 1														
az104-vm0	Not enabled	Enable													

Microsoft Azure

Home > Monitor | Virtual Machines >

Configure monitor | az104-vm0

Capabilities Review + enable

Infrastructure monitoring

Enable detailed metrics Yes

OpenTelemetry metrics (preview) Enabled

Azure Monitor workspace (New) defaultazuremonitorworkspace-ea

Performance counters Metrics collected:
filesystem usage, disk usage, disk operation time, disk operations, memory usage, network io, cpu time, network dropped, network errors, system uptime

Log-based metrics (classic) Enabled

Log Analytics workspace (New) defaultworkspace-57a8b5a5-89cd-44d7-aaaf-c65ebdf15a43-ea

Previous Enable

[Give Feedback](#)

Onboarding successful

Your environment is now onboarded.

[View configuration](#)

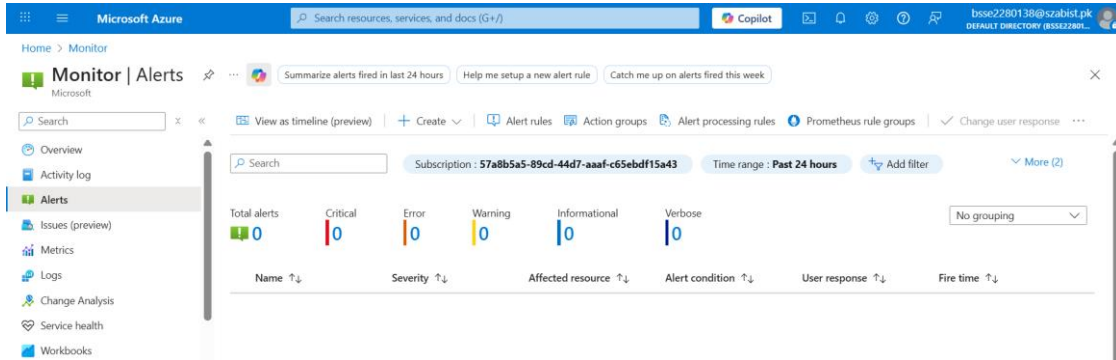
a few seconds ago

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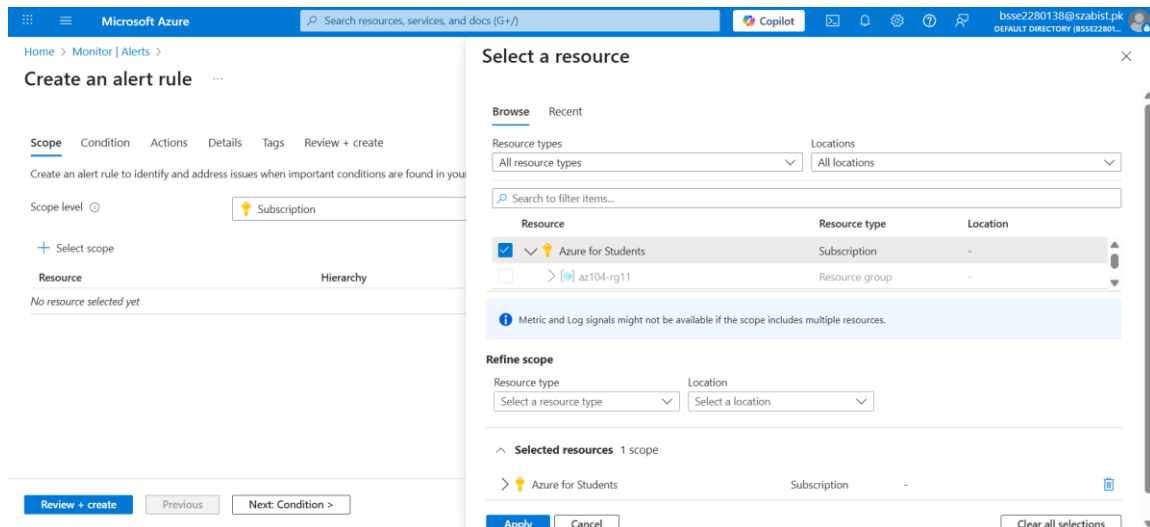
Lab Task 06 (Implement Monitoring)

Task 2: Create an alert

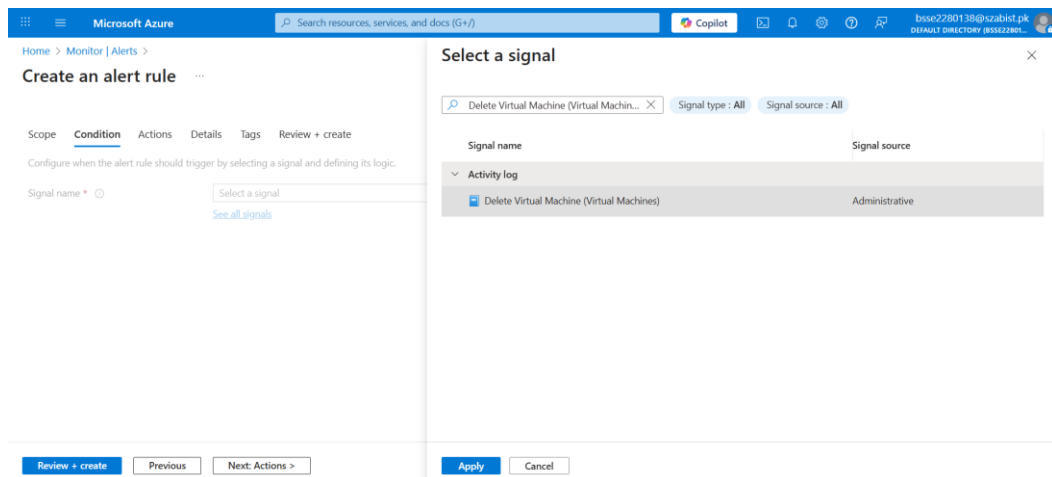
- **Azure Monitor – Alerts Page:**



- **Create Alert Rule & Select Subscription for Alert:**



- **Condition Tab – See All Signals. Select Delete Virtual Machine Signal:**



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Lab Task 06 (Implement Monitoring)

- Alert Logic and Status Verification:

Microsoft Azure

Home > Monitor | Alerts >

Create an alert rule

Configure when the alert rule should trigger by selecting a signal and defining its logic.

Signal name *

Chart period

No data available

Alert logic

Event Level Status Event initiated by

Review + create Previous Next: Actions >

Task 3: Configure action group notifications

- Actions Tab - Use Action Groups. Create Action Group - Basics Tab:

Microsoft Azure

Home > Monitor | Alerts > Create an alert rule >

Create action group

Basics Notifications Actions Tags Review + create

An action group invokes a defined set of notifications and actions when an alert is triggered. [Learn more](#)

Project details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription

Resource group *

Region *

Instance details

Action group name *

Display name *

The display name is limited to 12 characters

Review + create Previous Next: Notifications >

- Action Group – Notifications Tab (Email Setup):

Microsoft Azure

Home > Monitor | Alerts > Create an alert rule >

Create action group

Basics Notifications Actions Tags Review + create

Choose how to get notified when the action group is triggered. This step is optional.

Notification type Name Selected

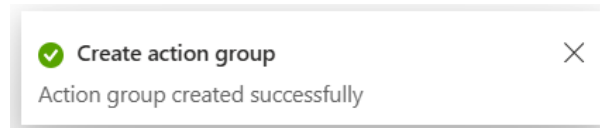
Review + create Previous Next: Notifications >

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Lab Task 06 (Implement Monitoring)

- **Save Action Group:**

The screenshot shows the 'Create action group' page in the Microsoft Azure portal. The page has a blue header with the Microsoft Azure logo and a search bar. Below the header, there's a breadcrumb trail: Home > Monitor | Alerts > Create an alert rule >. The main title is 'Create action group' with a three-dot menu icon. Below the title, there are tabs: Basics, Notifications, Actions, Tags, and Review + create. The 'Review + create' tab is selected. The page content is divided into sections: Basics, Notifications, Actions, and Tags. The Basics section shows the following details: Subscription: Azure for Students, Resource group: az104-rg11, Region: global, Action group name: Alert the operations team, and Display name: AlertOpsTeam. The Notifications section shows: Notification type: Email/SMS message/Push/Voice, Name: VM was deleted, and Selected: Email. The Actions section shows: None. The Tags section is empty. At the bottom, there are 'Create' and 'Previous' buttons.



You're now in the AlertOpsTeam action group [Info](#) [Update](#)

Microsoft Azure [azure-noreply@microsoft.com](#) to you

9:45 PM (2 minutes ago) ☆ 📧 ⓘ

Microsoft Azure

You've been added to an Azure Monitor action group

You are now in the AlertOpsTeam action group and will receive notifications sent to the group.

[View details on Azure Monitor action groups >](#)

Account information

Subscription ID: 57A885A5-89CD-44D7-AAAF-C65EBDF15A43
Resource group name: az104-rg11
Action group name: Alert the operations team

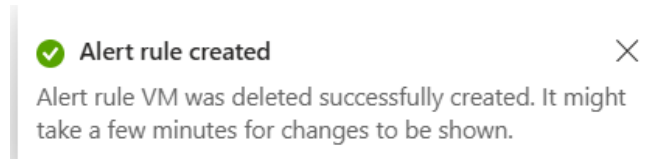
- **Alert Rule Details (Name and Description):**

The screenshot shows the 'Create an alert rule' page in the Microsoft Azure portal. The page has a blue header with the Microsoft Azure logo and a search bar. Below the header, there's a breadcrumb trail: Home > Monitor | Alerts >. The main title is 'Create an alert rule' with a three-dot menu icon. Below the title, there are tabs: Condition, Actions, and Details. The 'Condition' tab is selected. The page content is divided into sections: Condition, Actions, and Details. The Condition section shows: Condition preview: Whenever the Activity Log has an event with Category='Administrative', Signal name='Delete Virtual Machine (Virtual Machines)'. The Actions section shows: Action group name: Contain actions, and Alert the operations team: 1 Email. The Details section shows: Project details: Subscription: Azure for Students, Resource group: NetworkWatcherRG, Region: global. Alert rule details: Alert rule name: VM was deleted, Alert rule description: A VM in your resource group was deleted, and Enable upon creation: ☒. At the bottom, there are 'Create' and 'Previous' buttons.

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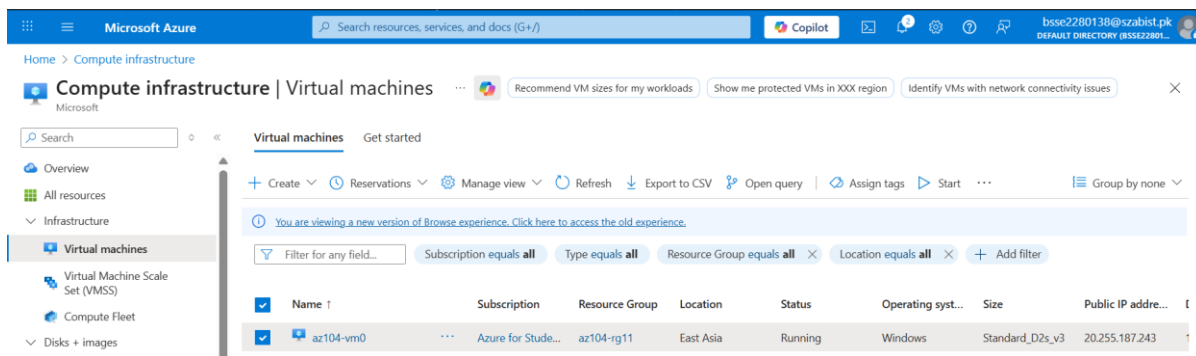
Lab Task 06 (Implement Monitoring)

- **Create Alert Rule:**

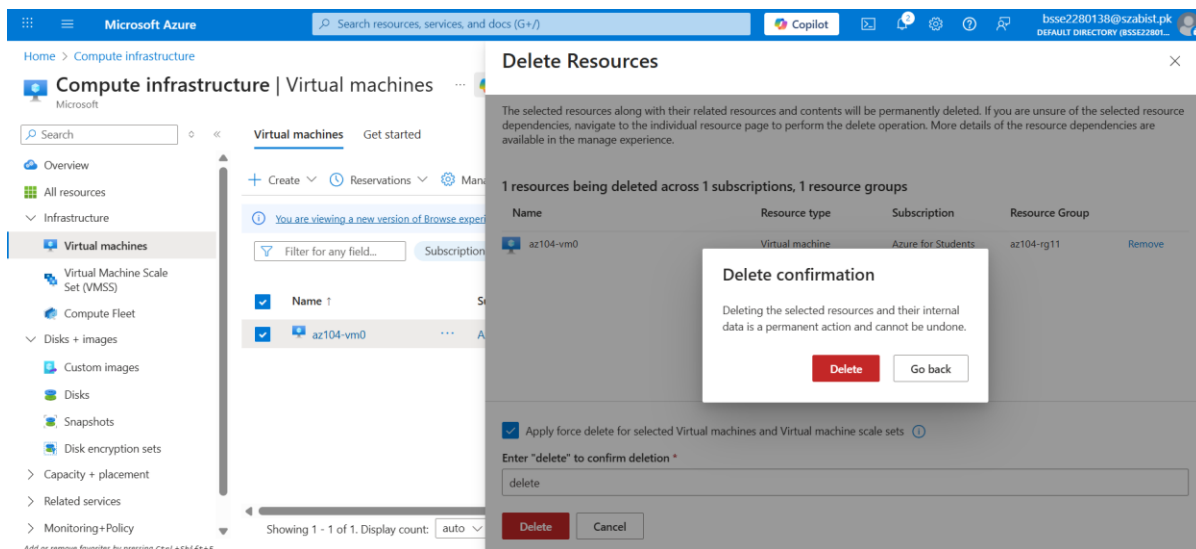


Task 4: Trigger an alert and confirm it is working

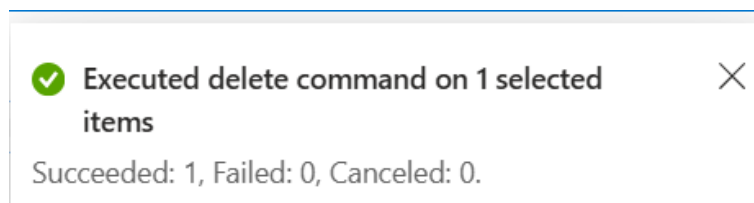
- **Select Virtual Machine to Delete:**



- **Delete Virtual Machine – Apply Force Delete:**



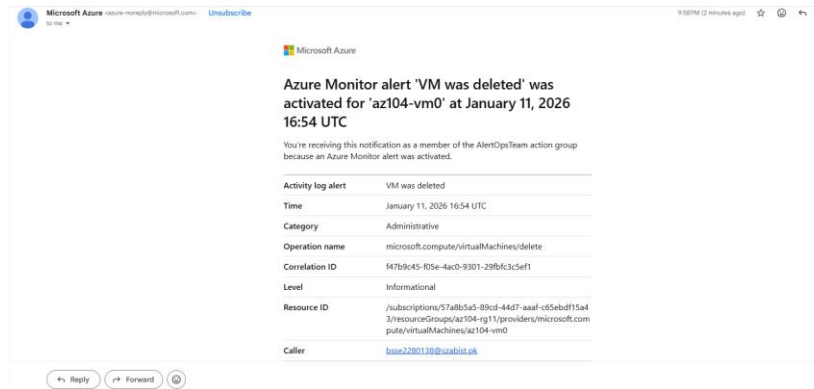
- **Notification of VM Deletion:**



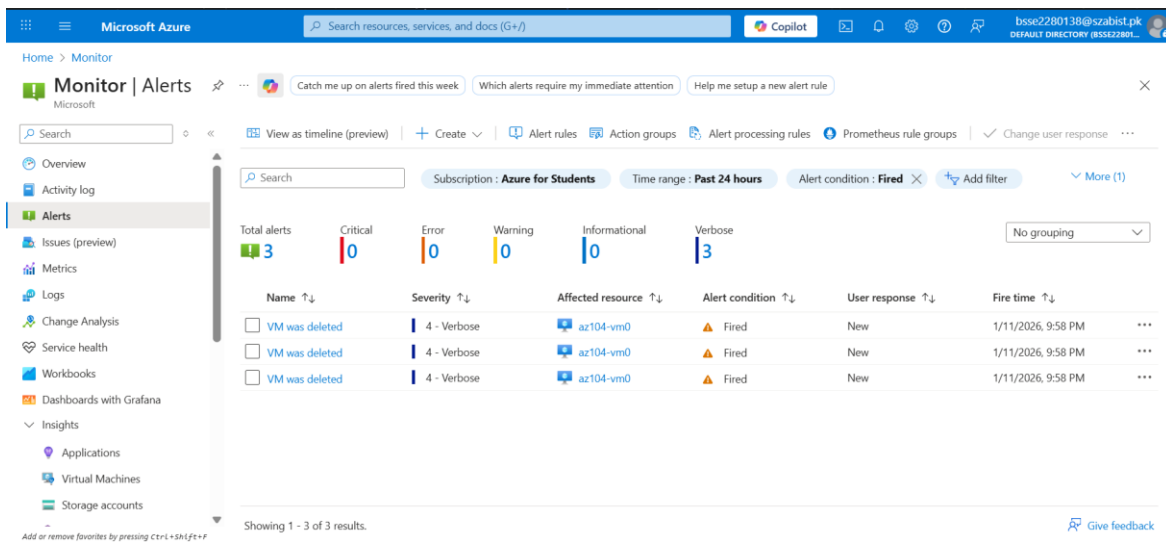
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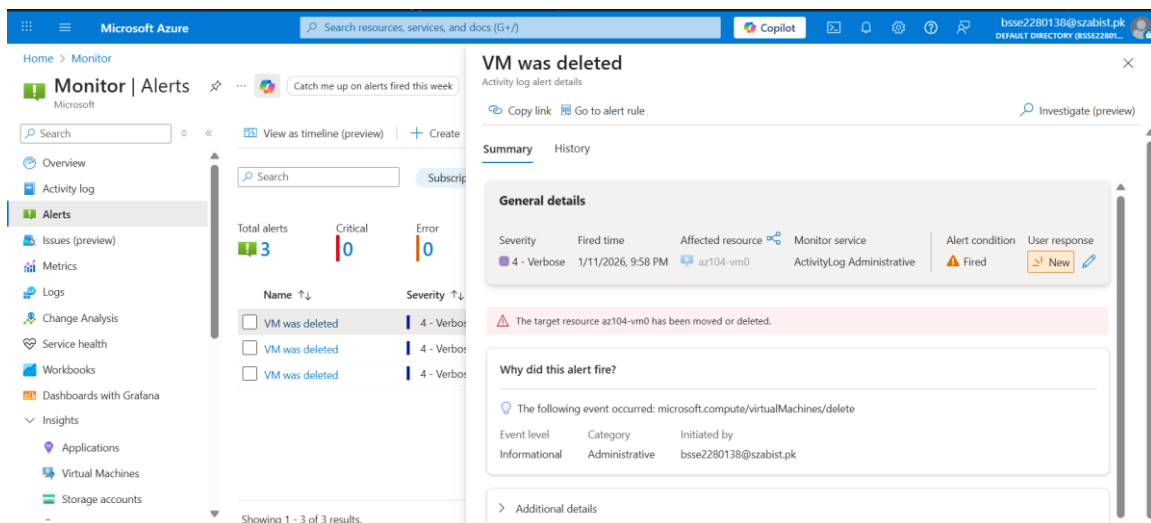
- **Confirm Alert Email Received:**



- **Alerts Page in Azure Monitor:**



- **Alert Details Pane:**



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Lab Task 06 (Implement Monitoring)

Task 5: Configure an alert processing rule

- Alert Processing Rules Page:

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information. The main heading is 'Alert processing rules'. Below the heading, there are tabs for 'Create', 'Columns', 'Refresh', 'Open query', 'Delete', 'Enable', and 'Disable'. A search bar is present, followed by filters for 'Subscription: Azure for Students', 'Resource group: all', 'Target scope: all', 'Status: Enabled', and 'Rule type: all'. A table with columns 'Name', 'Scope', 'Filter', 'Rule type', 'Scheduling', and 'Status' is shown, but it is empty. A message box states 'No alert processing rules found' with a suggestion to change search or scope and a 'Clear filters' button.

- Create Alert Processing Rule – Subscription Selection:

The screenshot shows the 'Create an alert processing rule' page in the Microsoft Azure portal. The left sidebar contains tabs for 'Scope', 'Rule settings', 'Scheduling', 'Details', 'Tags', and 'Review + create'. The 'Scope' tab is active, showing a 'Select a scope' dialog. The dialog has a 'Browse' section with a 'Resource types' dropdown set to 'All resource types' and a search bar. Below is a table of available scopes:

Scope	Resource type	Location
<input checked="" type="checkbox"/> Azure for Students	Subscription	-
<input type="checkbox"/> > az104-rg11	Resource group	-
<input type="checkbox"/> > defaultresourcegroup-ea	Resource group	-
<input type="checkbox"/> > MA_defaultazuremonitorworkspace-ea_eastasia_ma...	Resource group	-
<input type="checkbox"/> > NetworkWatcherRG	Resource group	-

Below the table, the 'Selected scopes' section shows '1 scope' selected: 'Azure for Students' (Subscription). At the bottom are 'Apply', 'Cancel', and 'Clear all selections' buttons.

- Rule Settings – Suppress Notifications:

The screenshot shows the 'Create an alert processing rule' page in the Microsoft Azure portal, specifically the 'Rule settings' tab. The 'Rule type' section has two options:

- ☒ Suppress notifications
The alert will still fire, but the action groups won't be invoked so you won't receive any notifications when it fires.
- ☐ Apply action group
An action group invokes a defined set of notifications and actions when an alert is triggered.

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Lab Task 06 (Implement Monitoring)

- Scheduling Tab – Define Maintenance Window:**

The screenshot shows the 'Create an alert processing rule' form in the Microsoft Azure portal, specifically the 'Scheduling' tab. The form is titled 'Define when you'd like to apply this rule.' and includes the following fields:

- Apply the rule:** Radio buttons for 'Always', 'At a specific time' (selected), and 'Recurring'.
- Start:** Date and time picker set to 01/11/2026 at 10:00 PM.
- End:** Date and time picker set to 01/12/2026 at 7:00 AM.
- Time zone:** Dropdown menu set to '(UTC+05:00) Islamabad, Karachi'.
- Preview:** Text indicating the rule will run 'From 11/01/2026 at 10:00 pm to 12/01/2026 at 7:00 am (UTC+05:00 Islamabad, Karachi)'.

At the bottom, there are three buttons: 'Review + create' (highlighted in blue), 'Previous', and 'Next: Details >'.

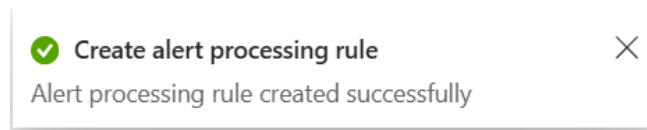
- Alert Processing Rule Details (Name, Description, Resource Group):**

The screenshot shows the 'Create an alert processing rule' form in the Microsoft Azure portal, specifically the 'Details' tab. The form is titled 'Select the subscription and resource group in which to save the alert processing rule.' and includes the following fields:

- Project details:**
 - Subscription:** Dropdown menu set to 'Azure for Students'.
 - Resource group:** Dropdown menu set to 'az104-rg11' with a 'Create new' link below it.
- Alert processing rule details:**
 - Rule name:** Text input field set to 'Planned Maintenance' with a green checkmark icon.
 - Description:** Text input field set to 'Suppress notifications during planned maintenance.'
 - Enable rule upon creation:** Checked checkbox.

At the bottom, there are three buttons: 'Review + create' (highlighted in blue), 'Previous', and 'Next: Tags >'.

- Review + Create Alert Processing Rule:**



The screenshot shows the 'Alert processing rules' list in the Microsoft Azure portal. The table displays the following data:

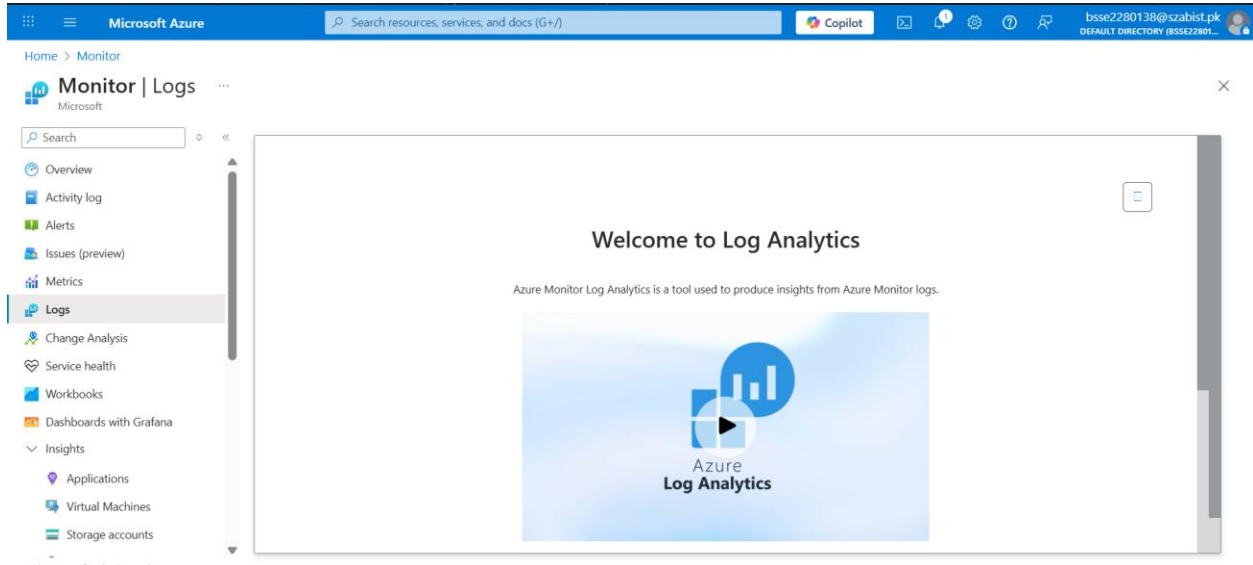
Name ↑↓	Scope	Filter	Rule type ↑↓	Scheduling	Status ↑↓	
Planned Maintenance	Azure for Students		Suppression	At a specific time	Enabled	...

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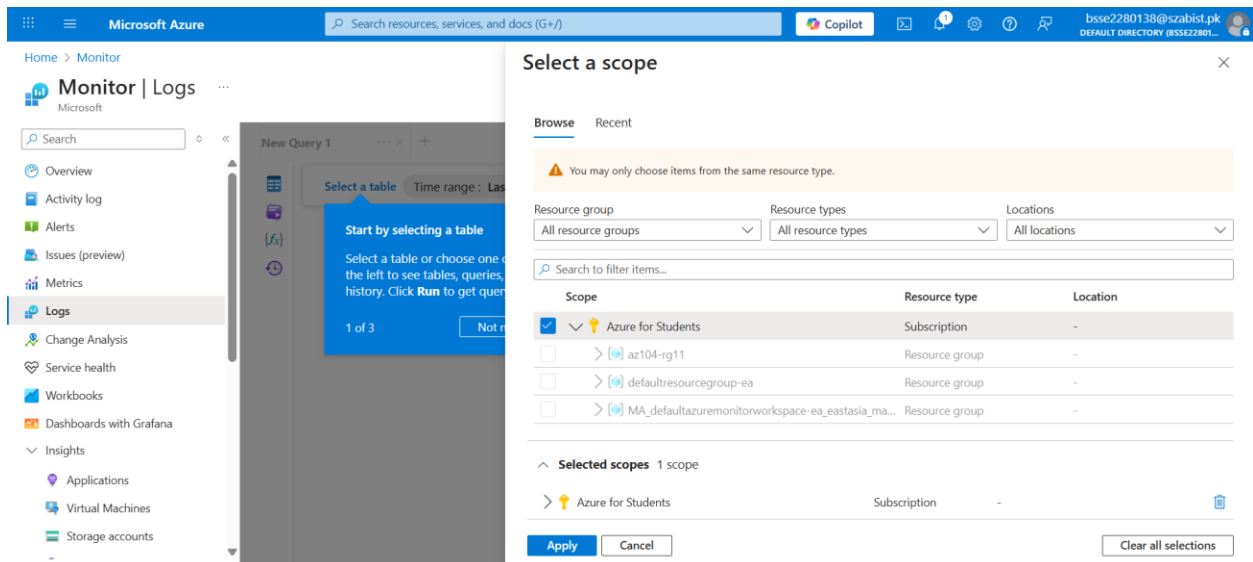
Lab Task 06 (Implement Monitoring)

Task 6: Use Azure Monitor log queries

- **Azure Monitor – Logs Page**



- **Select Scope / Subscription**



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Lab Task 06 (Implement Monitoring)

- Queries Tab – Virtual Machines. Run Preconfigured Query – Count Heartbeats

The screenshot shows the Microsoft Azure Monitor Logs interface. The left sidebar contains a navigation menu with options like Overview, Activity log, Alerts, Issues (preview), Metrics, and Logs. The 'Logs' section is selected. The main area displays a 'New Query 1' tab with a search bar and a 'Show: 1000 results' button. A 'Favorites' panel on the left lists 'Virtual machines' and 'Custom Logs'. The 'Heartbeat' query is highlighted in the Favorites list, and a tooltip is shown for it, indicating it is a preconfigured query that records agent health.

The screenshot shows the Microsoft Azure Monitor Logs interface with the 'Heartbeat' query results displayed. The 'Time range' is set to 'Last 24 hours' and 'Show: 1000 results'. The results are shown in a table with columns: TimeGenerated [UTC], SourceComputerId, ComputerIP, Computer, Category, OSType, and OSName. The table contains 10 rows of data, all showing 'Microsoft Windows Server' as the OSName.

TimeGenerated [UTC]	SourceComputerId	ComputerIP	Computer	Category	OSType	OSName
1/11/2026, 4:53:19.692 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:52:19.677 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:51:19.666 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:50:19.661 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:49:19.648 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:48:19.642 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:47:19.635 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:46:19.628 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:45:19.624 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:44:19.619 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:43:19.603 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:42:19.602 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server
1/11/2026, 4:41:19.587 PM	50b769be-d947-4a73-9759-1135cc6f9c24	20.255.187.243	az104-vm0	Azure Monitor Agent	Windows	Microsoft Windows Server

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- **Change Mode from Simple to KQL Mode then review the query & Replace the query and then click ****Run****. Review the resulting**

