

CST8912 – Cloud Solution Architecture

Graded Lab Activity #7

1. Analyze the cost-effectiveness of competing architectural solution proposals.

- Test the use of native tools available through cloud providers to manage costs
- Determine the guidance framework for managing and optimizing costs of cloud solutions
- Use strategies to track the cost metrics using cloud price calculators
- Review vendor offerings, services, pricing models, and service level agreements (SLA)

Introduction:

Cloud provider provides a variety of cloud services in a variety of cloud service models: IaaS, PaaS, and SaaS. When businesses migrate to the cloud, they must choose which model is best suited to their needs and is the most cost-effective. This course is designed to assist Cloud Architects in identifying their current cloud expenditures and providing greater awareness of the costs associated with each deployment model as well as each aspect of a cloud deployment.

Optimizing cloud costs begins with knowing your current cloud expenditures. This course introduces you to the tools built into the cloud Portal that can help you understand the total overall expenditures in cloud as well as break down those costs by area: Compute, Network, Storage, Identity, and App/Cloud Services.

The remainder of the course drills down on specific costs associated with each area of cloud identifies the costs associated with each service and provides very clear and concise methods for reducing cloud expenditures. Many of the cost savings methods will require minimal changes to your cloud deployment and will take just minutes to implement while other cost savings methods may take a shift in your cloud strategy, such as moving from IaaS to PaaS.

Purpose of the hands-on-lab that can be simulated for any CSP:



In this lab you will explore Azure functionality that would provide insight into performance and configuration of Azure resources, focusing in particular on Azure virtual machines. To accomplish this, you intend to examine the capabilities of Azure Monitor, including Log Analytics.

Lab scenario

Your organization has migrated their infrastructure to Azure. It is important that Administrators are notified of any significant infrastructure changes. You plan to examine the capabilities of Azure Monitor, including Log Analytics.

Task 1: Use a template to provision an infrastructure.

Task 2: Create an alert.

Task 3: Configure action group notifications.

Task 4: Trigger an alert and confirm it is working.

Task 5: Configure an alert processing rule.

Task 6: Use Azure Monitor log queries.

Task 1: Use a template to provision an infrastructure

1. In this task, you will deploy a virtual machine that will be used to test monitoring scenarios.
2. Download the \Allfiles\Lab11\az104-11-vm-template.json lab files to your computer.

The screenshot shows a GitHub repository page for 'AZ-104-MicrosoftAzureAdministrator'. The 'Code' tab is selected. In the 'Files' section, the 'master' branch is shown. The 'az104-11-vm-template.json' file is highlighted. The code editor displays the following JSON content:

```

1  {
2    "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json",
3    "contentVersion": "1.0.0.8",
4    "parameters": {
5      "adminUsername": {
6        "type": "string",
7        "metadata": {
8          "description": "Admin username"
9        }
10     },
11     "adminPassword": {
12       "type": "securestring",
13       "metadata": {
14         "description": "Admin password"
15       }
16     },
17     "vmNamePrefix": {
18       "type": "string",
19       "defaultValue": "az104-vm",
20       "metadata": {
21         "description": "VM name prefix"
22       }
23   }

```

3. Sign in to the Azure portal - <https://portal.azure.com>.
4. From the Azure portal, search for and select Deploy a custom template.

The screenshot shows the 'Custom deployment' page in the Microsoft Azure portal. The 'Select a template' tab is selected. The page displays instructions for deploying resources using Azure Resource Manager templates. It shows common templates like 'Create a Linux virtual machine' and 'Create a Windows virtual machine'. Below this, there's a section for 'Start with a quickstart template or template spec'. Under 'Template source', the 'Quickstart template' radio button is selected. A dropdown menu for 'Quickstart template (disclaimer)' is open, showing a list of options.

5. On the custom deployment page, select Build you own template in the editor.

The screenshot shows the Microsoft Azure 'Edit template' interface. The top navigation bar includes 'Microsoft Azure', a search bar, and various icons. The main area is titled 'Edit template' with the sub-instruction 'Edit your Azure Resource Manager template'. Below this are buttons for '+ Add resource', 'Quickstart template', 'Load file', and 'Download'. On the left, there's a sidebar with 'Parameters (0)', 'Variables (0)', and 'Resources (0)'. The main content area contains a code editor with the following JSON template:

```

1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3      "contentVersion": "1.0.0.0",
4      "parameters": {},
5      "resources": []
6 }

```

At the bottom of the editor are 'Save' and 'Discard' buttons.

6. On the edit template page, select Load file.
7. Locate and select the \Allfiles\Labs11\az104-11-vm-template.json file and select Open.

The screenshot shows the Microsoft Azure 'Edit template' interface after a file has been uploaded. The top navigation bar and sidebar are identical to the previous screenshot. The main content area now displays a more complex JSON template with expanded sections for 'Parameters', 'Variables', and 'Resources'. A notification message in the top right corner indicates that 'Upload Completed for az104-11-vm-template.json' with a size of '8.09 KB | Streaming upload'.

```

1  {
2      "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
3      "contentVersion": "1.0.0.0",
4      "parameters": {
5          "adminUsername": {
6              "type": "string",
7              "metadata": {
8                  "description": "Admin username"
9              }
10         },
11         "adminPassword": {
12             "type": "securestring",
13             "metadata": {
14                 "description": "Admin password"
15             }
16         },
17         "vmNamePrefix": {
18             "type": "string",
19             "defaultValue": "az104-vm",
20             "metadata": {
21                 "description": "VM name prefix"
22             }
23         },
24         "pipNamePrefix": {
25             "type": "string",
26         }
27     },
28     "variables": {
29         "storageAccountName": "[concat(parameters('vmNamePrefix'), copyIndex())]"
30     },
31     "resources": [
32         {
33             "type": "Microsoft.Network/networkInterfaces",
34             "name": "[concat(parameters('nicNamePrefix'), copyIndex())]",
35             "apiVersion": "2018-08-01",
36             "location": "[resourceGroup().location]",
37             "dependsOn": [
38                 "[resourceId('Microsoft.Storage/storageAccounts', variables('storageAccountName'))]"
39             ],
40             "properties": {
41                 "ipConfigurations": [
42                     {
43                         "name": "IPConfig1",
44                         "properties": {
45                             "privateIPAllocationMethod": "Dynamic",
46                             "subnet": "[resourceId('Microsoft.Network/virtualNetworks', parameters('virtualNetworkName')), 'subnets', 1]"
47                         }
48                     }
49                 ]
50             }
51         },
52         {
53             "type": "Microsoft.Network/publicIPAddresses",
54             "name": "[concat(parameters('pipNamePrefix'), copyIndex())]",
55             "apiVersion": "2018-08-01",
56             "location": "[resourceGroup().location]",
57             "dependsOn": [
58                 "[resourceId('Microsoft.Network/networkInterfaces', concat(parameters('nicNamePrefix'), copyIndex()))]"
59             ],
60             "properties": {
61                 "publicIPAllocationMethod": "Dynamic"
62             }
63         },
64         {
65             "type": "Microsoft.Compute/virtualMachines",
66             "name": "[concat(parameters('vmNamePrefix'), copyIndex())]",
67             "apiVersion": "2018-08-01",
68             "location": "[resourceGroup().location]",
69             "dependsOn": [
70                 "[resourceId('Microsoft.Network/publicIPAddresses', concat(parameters('pipNamePrefix'), copyIndex()))]",
71                 "[resourceId('Microsoft.Network/networkInterfaces', concat(parameters('nicNamePrefix'), copyIndex()))]"
72             ],
73             "properties": {
74                 "osProfile": {
75                     "computerName": "[concat(parameters('vmNamePrefix'), copyIndex())]",
76                     "adminUsername": "[parameters('adminUsername')]",
77                     "adminPassword": "[parameters('adminPassword')]"
78                 },
79                 "hardwareProfile": {
80                     "vmSize": "Standard_DS1_v2"
81                 },
82                 "networkProfile": {
83                     "networkInterfaces": [
84                         {
85                             "id": "[resourceId('Microsoft.Network/networkInterfaces', concat(parameters('nicNamePrefix'), copyIndex()))]"
86                         }
87                     ]
88                 }
89             }
90         }
91     ]
92 }

```

At the bottom of the editor are 'Save' and 'Discard' buttons.

8. Select Save.
9. Use the following information to complete the custom deployment fields, leaving all other fields with their default values:

10. Setting	11. Value
12. Subscription	13. Your Azure subscription
14. Resource group	15. CST8912 (If necessary, select Create new)
16. Region	17. Canada Central
18. Username	19. localadmin
20. Password	21. Provide a complex password

The screenshot shows the Microsoft Azure Custom Deployment wizard. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. The main title is 'Custom deployment' with a '... more' link. A purple banner at the top right says 'New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →'. Below this, a message encourages selecting a subscription and resource group. The 'Subscription' dropdown is set to 'Azure for Students' and the 'Resource group' dropdown is set to '(New) CST8912' with a 'Create new' link. The 'Instance details' section contains fields for 'Region' (set to 'Canada Central'), 'Admin Username' (set to 'localadmin'), 'Admin Password' (set to '*****'), 'Vm Name Prefix' (set to 'az104-vm'), 'Pip Name Prefix' (set to 'az104-pip'), 'Nic Name Prefix' (set to 'az104-nic'), 'Image Publisher' (set to 'MicrosoftWindowsServer'), and 'Image Offer' (set to 'WindowsServer'). At the bottom are 'Previous', 'Next', and 'Review + create' buttons.

22. Select Review + Create, then select Create.

Microsoft Azure

Home > Custom deployment

Deploy from a custom template

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Basics

Subscription	Azure for Students
Resource group	CST8912
Region	Canada Central
Admin Username	localadmin
Admin Password	*****
Vm Name Prefix	az104-vm
Pip Name Prefix	az104-pip
Nic Name Prefix	az104-nic
Image Publisher	MicrosoftWindowsServer
Image Offer	WindowsServer
Image SKU	2019-Datadcenter
Vm Size	Standard_D2s_v3
Virtual Network Name	az104-vnet
Address Prefix	10.0.0.0/24
Virtual Network Resource Group	az104-rg11
Subnet0Name	subnet0
Subnet0Prefix	10.0.0.0/26
Nsg Name	az104-nsg01

Previous Next Create

Microsoft Azure

Home > Microsoft.Template-20241105200005 | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview

Your deployment is complete

Deployment name : Microsoft.Template-20241105200005
 Subscription : Azure for Students
 Resource group : CST8912
 Start time : 11/5/2024, 8:00:21 PM
 Correlation ID : 2fd7d254-abac-4b41-a16d-4e8b230b39d6

Deployment details

Next steps

Go to resource group

Give feedback

Tell us about your experience with deployment

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.
[Set up cost alerts >](#)

Notifications

More events in the activity log → Dismiss all

Deployment succeeded

Deployment 'Microsoft.Template-20241105200005' to resource group 'CST8912' was successful.

Pin to dashboard Go to resource group a few seconds ago

23. Wait for the deployment to finish, then click Go to resource group.

The screenshot shows the Microsoft Azure Resource Group Overview for the 'CST8912' resource group. The left sidebar includes links for Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Cost Management, Monitoring, Automation, Help, Support + Troubleshooting, and a search bar. The main content area displays a table of resources with columns for Name, Type, and Location. The resources listed are:

Name	Type	Location
az104-nic0	Network Interface	Canada Central
az104-nsg01	Network security group	Canada Central
az104-pip0	Public IP address	Canada Central
az104-vm0	Virtual machine	Canada Central
az104-vm0_disk1_ea02f15ef9114f4e8a41c21e4f04c382	Disk	Canada Central
az104-vnet	Virtual network	Canada Central
az10411mihul5wmnkj6	Storage account	Canada Central

24. Review what resources were deployed. There should be one virtual network with one virtual machine.

The screenshot shows the Microsoft Azure Virtual Machine Overview for the 'az104-vm0' virtual machine. The left sidebar includes links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Bastion, Windows Admin Center, Networking, Network settings, Load balancing, Application security groups, Network manager, Settings, and Availability + scale. The main content area displays the VM's properties and networking details. Key information includes:

- Resource group:** CST8912
- Status:** Running
- Location:** Canada Central
- Subscription:** Azure for Students
- Subscription ID:** d690b447-1036-4d22-b055-a8625e53fed5
- Operating system:** Windows (Windows Server 2019 Datacenter)
- Size:** Standard D2s v3 (2 vcpus, 8 GiB memory)
- Public IP address:** 52.228.74.203
- Virtual network/subnet:** az104-vnet/subnet0
- DNS name:** Not configured
- Health state:** -
- Time created:** 11/6/2024, 1:00 AM UTC
- Tags:** (edit) Add tags
- Properties:** Virtual machine (Computer name: az104-vm0, Operating system: Windows (Windows Server 2019 Datacenter), VM generation: V1, VM architecture: x64)
- Networking:** Public IP address: 52.228.74.203 (Network interface), Private IP address: 10.0.0.4, Private IP address (IPv6): -

25. Configure Azure Monitor for virtual machines (this will be used in the last task)

26. In the portal, search for and select Monitor.

27. Take a minute to review all the insights, detection, triage, and diagnosis tools that are available.

28. Select View in the VM Insights box, and then select Configure Insights.

29. Select your virtual machine, and then Enable (twice).

Microsoft Azure

Home > Monitor

Monitor | Virtual Machines

Search... Refresh Provide Feedback

Get started Overview Performance Map

Filter by name... Subscription : 2 subscriptions Resource group : All resource groups Type : All types Location : All locations

Group by : Subscription, Resource group

Monitored (0) Not monitored (1) Workspace configuration Other onboarding options

Name	Monitor Coverage	Workspace
✓ Azure for Students	1 of 1	
✓ cst8912	1 of 1	
az104-vm0	Not enabled	Enable

Microsoft Azure

Home > Monitor

Monitor | Virtual Machines

Search... Refresh Provide Feedback

Get started Overview Performance

Filter by name... Subscription

Group by : Subscription, Resource group

Monitored (0) Not monitored (1)

Name
✓ Azure for Students
✓ cst8912
az104-vm0

Azure Monitor

Insights Onboarding

Get more visibility into the health and performance of your virtual machine

With an Azure virtual machine you get host CPU, disk and up/down state of your VMs out of the box. Enabling additional monitoring capabilities provides insights into the performance and dependencies for your virtual machines.

You will be billed based on the amount of data ingested and your data retention settings. It can take between 5-10 minutes to configure the virtual machine and the monitoring data to appear.

The map data set collected with Azure Monitor for VMs is intended to be infrastructure data about the resources being deployed and monitored. For details on data collected please click here.

Enable

Having difficulties enabling Azure Monitors for VM? Troubleshoot

Have more questions?
Learn more about virtual machine monitoring

Monitoring configuration

VM Insights now supports data collection using the Azure Monitor Agent and data collection rules.

Subscription *: Azure for Students

Data collection rule: (new) MSVMI-DefaultWorkspace-d690b447-1036-4d22-b055-a8625e53fed5-EUS

Guest performance: Enabled

Processes and dependencies (Map): Disabled

Log Analytics workspace: DefaultWorkspace-d690b447-1036-4d22-b055-a8625e53fed5-EUS

Note: This will also enable System Assigned Managed identity, in addition to existing User Assigned identities (if any). **Note:** Unless specified in the request, the machine will default to using System Assigned Identity. [Learn More](#)

Currently, only resources in certain regions are supported. [Learn More](#)

Configure **Cancel**

30. Take the defaults for subscription and data collection rules, then select Configure.

Deployment succeeded

Deployment 'VMInsightsOnboardingDeployment-a6ae371e-dd57-4195-9e02-873af6e16' to resource group 'cst8912' was successful.

Pin to dashboard... Go to resource group...

Get started Overview Performance Map

Filter by name... **Subscription : 2 subscriptions** **Resource group : All resource groups** **Type : All types** **Location : All locations**

Group by : Subscription, Resource group

Monitored (0) Not monitored (1) Workspace configuration Other onboarding options

Name	Monitor Coverage	Workspace
az8912	1 of 1	
az104-vm0	Not enabled	Enable

31. It will take a few minutes for the virtual machine agent to install and configure, proceed to the next step.

The screenshot shows the Microsoft Azure Monitor interface for Virtual Machines. On the left, there's a navigation sidebar with links like Overview, Activity log, Alerts, Metrics, Logs, Change Analysis, Service health, Workbooks, Investigator (preview), Insights, Applications, Virtual Machines (which is selected), Storage accounts, Containers, Networks, and CSV download. The main content area has tabs for Get started, Overview (selected), Performance, and Map. It shows a search bar, a filter for 'Subscription : 2 subscriptions' (All resource groups, All types, All locations), and a table for 'Not monitored (1)'. The table lists 'Azure for Students' (Monitor Coverage: 1 of 1), 'cst8912' (Monitor Coverage: 1 of 1), and 'az104-vm0' (Not enabled, with an 'Enable' button). To the right, there's a 'Notifications' section with two deployment succeeded messages: one from 'VMInsightsOnboardingDeployment-a6ae371e-dd57-4195-9e02-873af6e16' to 'cst8912' and another from 'Microsoft.Template-20241105200005' to 'CST8912'. Both notifications have 'Pin to dashboard' and 'Go to resource group' buttons.

Task 2: Create an alert

32. In this task, you create an alert for when a virtual machine is deleted.

The screenshot shows the Microsoft Azure Monitor Overview page. The left sidebar includes links for Overview (selected), Activity log, Alerts (which is also selected), Metrics, Logs, Change Analysis, Service health, Workbooks, Investigator (preview), Insights, Managed Services, Settings, and Support + Troubleshooting. The main content area has tabs for Overview (selected) and Tutorials. Under 'Insights', it says 'Use curated monitoring views for specific Azure resources.' with a link to 'View all insights'. It features four cards: Application insights (Monitor your app's availability, performance, errors, and usage), Container Insights (Gain visibility into the performance and health of your controllers, nodes, and containers), Network Insights (View the health and metrics for all deployed network resources), and VM Insights (Monitor the health, performance, and dependencies of your VMs and VM scale sets). Below this is a section for 'Detection, triage, and diagnosis' with links for Metrics, Alerts (selected), and Logs.

33. Continue on the Monitor page , select Alerts.

The screenshot shows the Microsoft Azure Monitor Alerts interface. The left sidebar has 'Alerts' selected. The main area displays search and filter controls, including 'Subscription: 2 selected', 'Time range: Past 24 hours', 'Alert condition: Fired', 'Severity: all', and 'No grouping'. Below these are alert severity counts: Total alerts (1), Critical (0), Error (0), Warning (0), Informational (0), and Verbose (0). A large '!' icon indicates 'No alerts found'. A message at the top encourages users to take a survey to improve services.

34. Select Create + and select Alert rule.

35. Select the box for the resource group, then select Apply. This alert will apply to any virtual machines in the resource group. Alternatively, you could just specify one particular machine.

The screenshot shows the 'Create an alert rule' wizard. The current step is 'Select a resource'. It includes a 'Browse' tab, a search bar, and a table listing resources. The table has columns for Resource, Resource type, and Location. Two items are listed: 'AVD-Prod' and 'Azure for Students', both categorized as 'Subscription' under 'Resource type'.

Resource	Resource type	Location
> AVD-Prod	Subscription	-
> Azure for Students	Subscription	-

Microsoft Azure

Home > Monitor | Alerts > Create an alert rule

Scope Condition Actions Details Tags Review + create

Create an alert rule to identify and address issues when important conditions are found in your monitoring data.

+ Select scope

Resource	Hierarchy
No resource selected yet	

Select a resource

Browse Recent

Subscription: All subscriptions Resource types: All resource types Locations: All locations

Search to filter items...

Resource	Resource type	Location
Azure for Students	Subscription	-
CST8912	Resource group	-
DefaultResourceGroup-EUS	Resource group	-
NetworkWatcherRG	Resource group	-

Metric and Log signals might not be available if the scope includes multiple resources.

Refine scope

Resource type: Select a resource type Location: Select a location

Selected resources: 1 scope

CST8912 Resource group -

Apply Cancel Clear all selections

Microsoft Azure

Home > Monitor | Alerts > Create an alert rule

Scope Condition Actions Details Tags Review + create

Create an alert rule to identify and address issues when important conditions are found in your monitoring data. [Learn more](#)

+ Select scope

Resource	Hierarchy
CST8912	Azure for Stude...

Review + create Previous Next: Condition >

36. Select the Condition tab and then select the See all signals link.

Select a signal

Search by signal name: Delete Virtual Machine

Signal type: All Signal source: All

Signal name	Signal source
Log search	
Custom log search	Log Analytics
Resource health	
Resource health	Resource health
Activity log	
(Deprecated. Please use resource paths without '/apis/' segment) Delete collection (...)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete container (...)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete database (...)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete graph (Gra...)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete keyspace (...)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete table (Table)	Administrative
(Deprecated. Please use resource paths without '/apis/' segment) Delete table (Table)	Administrative

Apply Cancel

37. Search for and select Delete Virtual Machine (Virtual Machines). Notice the other built-in signals. Select Apply

Select a signal

Search by signal name: Delete Virtual Machine

Signal type: All Signal source: All

Signal name	Signal source
Activity log	
Delete Virtual Machine (Virtual Machines)	Administrative
Delete Virtual Machine and Virtual Machine scale sets in a Azure Fleet resource (File...)	Administrative
Delete Virtual Machine Associated Network Security Group (Virtual Machine Associa...)	Administrative
Delete Virtual Machine Extension (Virtual Machine Extensions)	Administrative
Delete Virtual Machine Image (Virtual Machine Image)	Administrative
Delete Virtual Machine in a Virtual Machine Scale Set (Virtual Machine in Scale Set)	Administrative
Delete virtual machine pools. (Virtual Machine Pools)	Administrative
Delete Virtual Machine run command (Virtual Machine RunCommands)	Administrative
Delete Virtual Machine Scale Set (Virtual Machine Scale Sets)	Administrative
Delete Virtual Machine Scale Set Extension (Virtual Machine Scale Set Extensions)	Administrative

Apply Cancel

Scope Condition Actions Details Tags Review + create

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

Signal name * ⓘ Delete Virtual Machine (Virtual Machines) ⌂

See all signals

Chart period Over the last 6 hours

No data available

7 PM

activityLogHistoryBarSeries

Review + create Previous Next: Actions >

38. In the Alert logic area (scroll down), review the Event level selections. Leave the default of All selected.

No data available

7 PM

activityLogHistoryBarSeries

View events in Azure Monitor - Activity Log ⓘ

Alert logic

Event Level ⓘ Status ⓘ Event initiated by ⓘ

All selected All selected *(All services and users) Add event initiator

Condition preview

Whenever the Activity Log has an event with Category='Administrative', Signal name='Delete Virtual Machine (Virtual Machines)'

Review + create Previous Next: Actions >

39. Review the Status selections. Leave the default of All selected.
 40. Leave the Create an alert rule pane open for the next task.

Task 3: Configure action group notifications

1. In this task, if the alert is triggered send an email notification to the operations team.
2. Continue working on your alert. Select Next: Actions, and then select Create action group.
3. On the Basics tab, enter the following values for each setting.

Setting	Value
Project details	
Subscription	your subscription
Resource group	CST8912
Region	Global (default)
Instance details	
Action group name	Alert the operations team (must be unique in the resource group)
Display name	AlertOpsTeam

The screenshot shows the 'Create action group' dialog box in the Microsoft Azure portal. The 'Basics' tab is active. Under 'Project details', the 'Subscription' dropdown is set to 'Azure for Students' and the 'Resource group' dropdown is set to 'CST8912'. Under 'Instance details', the 'Action group name' field contains 'Alert the operations team' and the 'Display name' field contains 'AlertOpsTeam'. At the bottom of the dialog, there are three buttons: 'Review + create' (highlighted in blue), 'Previous', and 'Next: Notifications >'. The top navigation bar shows the user's email (shak0039@algonquinlive...) and the Algonquin College logo.

4. Select Next: Notifications and enter the following values for each setting.

Setting	Value
Notification type	Select Email/SMS message/Push/Voice
Name	VM was deleted

5. Select Email, and in the Email box, enter your email address, and then select OK.

The screenshot shows the 'Create action group' step in the 'Monitor | Alerts' section of Microsoft Azure. The 'Notifications' tab is selected. A notification rule named 'VM was deleted' is configured to send an email to 'shak0039@algonquinlive.com'. Other options like SMS, mobile app notifications, and voice are available but not selected.

- Once the action group is created move to the Next: Details tab and enter the following values for each setting.

Setting	Value
Alert rule name	VM was deleted
Alert rule description	A VM in your resource group was deleted

The screenshot shows the 'Create an alert rule' dialog. The 'Review + create' tab is selected. The alert rule is configured to trigger on 'Azure for Students' whenever there is an event in the Activity Log with Category='Administrative' and Signal name='Delete Virtual Machine (Virtual Machines)'. It uses the 'VM was deleted' action group and is associated with the project 'Azure for Students' under 'CST8912'.

The screenshot shows the Microsoft Azure Monitor Alerts dashboard. The left sidebar includes links for Overview, Activity log, Alerts (which is selected), Metrics, Logs, Change Analysis, Service health, Workbooks, Investigator (preview), Insights, Managed Services, Settings, and Support + Troubleshooting. The main area displays alert counts: Total alerts (1), Critical (0), Error (0), Warning (0), Informational (0), and Verbose (0). Below this is a table header with columns: Name (sorted by ascending Name), Severity (sorted by ascending Severity), Affected resource (sorted by ascending Affected resource), Alert condition (sorted by ascending Alert condition), and U (unsorted). A large message bubble icon with an exclamation mark is centered, and below it, the text "No alerts found". On the right side, there is a "Notifications" panel with a message: "More events in the activity log → Dismiss all" and a notification card: "Alert rule created" (green checkmark) with the message "Alert rule VM was deleted successfully created. It might take a few minutes for changes to be shown." and timestamp "a few seconds ago".

7. Select Review + create to validate your input, then select Create.

The screenshot shows the "Create action group" configuration page. At the top, there are tabs: Basics, Notifications, Actions, Tags, and Review + create (which is selected). Below this, a note says: "This is a summary of your action group. Please review to ensure the information is correct and consider [Azure Monitoring Pricing](#) and the [Azure Privacy Statement](#)." The "Basics" section contains the following details:

Subscription	Azure for Students
Resource group	CST8912
Region	global
Action group name	Alert the operations team
Display name	AlertOpsTeam

The "Notifications" section shows:

Notification type Email/SMS message/Push/Voice	Name VM was deleted	Selected Email
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The "Actions" section shows: None.

At the bottom, there are "Create" and "Previous" buttons.

The screenshot shows the Microsoft Azure 'Create an alert rule' interface. On the left, there's a sidebar with 'Scope', 'Condition', 'Actions', 'Details', 'Tags' (which is selected), and 'Review + create'. Below this, there's a note about tags and a table for defining them. At the bottom are 'Review + create', 'Previous', and 'Next: Review + create >' buttons.

Notifications

More events in the activity log → Dismiss all ▾

- Create action group** Action group created successfully a few seconds ago
- Deployment succeeded** Deployment 'VMInsightsOnboardingDeployment-a6ae371e-dd57-4195-9e02-873af6e16' to resource group 'cst8912' was successful. Pin to dashboard Go to resource group 39 minutes ago
- Deployment succeeded** Deployment 'Microsoft.Template-20241105200005' to resource group 'CST8912' was successful. Pin to dashboard Go to resource group an hour ago

Task 4: Trigger an alert and confirm it is working

- In this task, you trigger the alert and confirm a notification is sent.

Note: If you delete the virtual machine before the alert rule deploys, the alert rule might not be triggered.

- In the portal, search for and select Virtual machines.

The screenshot shows the Microsoft Azure 'Virtual machines' list page. The table has columns for Name, Subscription, Resource group, Location, Status, Operating system, Public IP address, and Disks. One record is listed: 'az104-vm0' (Subscription: Azure for Students, Resource group: CST8912, Location: Canada Central, Status: Running, OS: Windows, IP: 52.228.74.203, Disks: 1).

Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Public IP address ↑↓	Disks ↑↓	
az104-vm0	Azure for Students	CST8912	Canada Central	Running	Windows	Standard_D2s_v3	52.228.74.203	1

10. Check the box for the az104-vm0 virtual machine.

The screenshot shows the Microsoft Azure portal interface. The user is on the 'Virtual machines' page under the 'Home' section. The search bar at the top contains 'Search resources, services, and docs (G+)'. Below the search bar are various navigation and management buttons like 'Copilot', 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', and 'Services'. A filter bar at the top allows filtering by 'Subscription equals all', 'Type equals all', 'Resource group equals all', and 'Location equals all'. The main table lists one record: 'az104-vm0' which is selected (indicated by a checked checkbox). The table columns include Name, Subscription, Resource group, Location, Status, Operating system, Public IP address, and Disks. At the bottom of the table, there are sorting options and a 'No grouping' dropdown. The footer of the page includes a 'Give feedback' link.

11. Select Delete from the menu bar.

12. Check the box for Apply force delete. Enter delete to confirm and then select Delete.

The screenshot shows the Microsoft Azure portal interface. The user is on the 'Virtual machines' page under the 'Home' section. The search bar at the top contains 'Search resources, services, and docs (G+)'. Below the search bar are various navigation and management buttons like 'Copilot', 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', and 'Services'. A filter bar at the top allows filtering by 'Subscription equals all', 'Type equals all', 'Resource group equals all', and 'Location equals all'. The main table lists one record: 'az104-vm0' which is selected (indicated by a checked checkbox). The table columns include Name, Subscription, Resource group, Location, Status, Operating system, Public IP address, and Disks. At the bottom of the table, there are sorting options and a 'No grouping' dropdown. On the right side of the screen, a 'Delete Resources' dialog box is open. It displays the message: 'The selected resources along with their related resources and contents will be permanently deleted. If you are unsure of the selected resource dependencies, navigate to the individual resource page to perform the delete operation. More details of the resource dependencies are available in the manage experience.' Below this message is a table titled 'Resources to be deleted (1)'. The table has two columns: 'Name' and 'Resource type'. It shows one entry: 'az104-vm0' (VirtualMachine). There is also a 'Remove' link next to it. At the bottom of the dialog, there is a checkbox labeled 'Apply force delete for selected Virtual machines and Virtual machine scale sets' (with a help icon), a text input field containing 'delete', and two buttons: 'Delete' (in red) and 'Cancel'.

13. In the title bar, select the Notifications icon and wait until vm0 is successfully deleted.

The screenshot shows the Microsoft Azure portal. The top navigation bar includes 'Microsoft Azure', a search bar, 'Copilot', and user information 'shak0039@algonquinlive... ALGONQUIN COLLEGE (ALGONQ...)'. The main area is titled 'Virtual machines' under 'Home >'. It displays a message: 'No virtual machines to display' with a note to 'Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.' Below this is a 'Create' button. To the right, a 'Notifications' panel is open, showing a log entry: 'Executed delete command on 1 selected items' with 'Succeeded: 1, Failed: 0, Canceled: 0.' and a timestamp '2 minutes ago'.

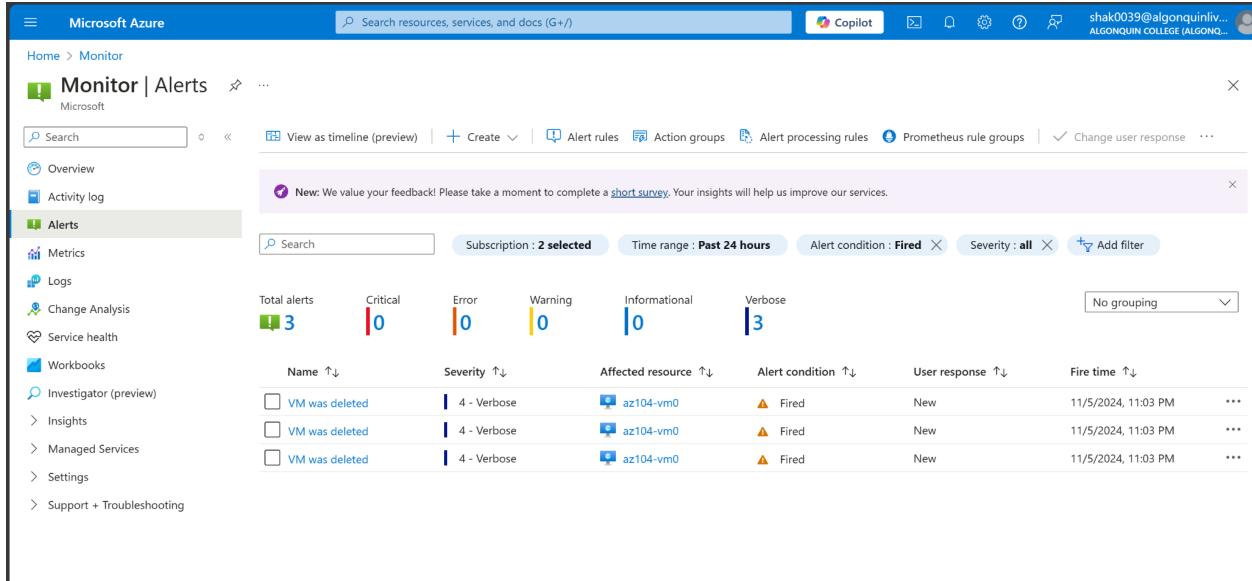
14. You should receive a notification email that reads, Important notice: Azure Monitor alert VM was deleted was activated... If not, open your email program and look for an email from azure-noreply@microsoft.com.

15. Screenshot of alert email.

The screenshot shows the Microsoft Outlook inbox. The left sidebar includes 'Mail', 'Calendar', 'Groups', 'To Do', 'OneDrive', and 'More apps'. The inbox list shows several emails, with one from 'NoReply_Brightspace@alg...' titled 'Important notice: Azure Monitor alert VM was deleted was activated'. The email body contains the text: 'Azure Monitor alert 'VM was deleted' was activated for 'az104-vm0' at November 6, 2024 3:56 UTC'. Below the email, a detailed view shows the following information:

Activity log alert	VM was deleted
Time	November 6, 2024 3:56 UTC
Category	Administrative
Operation name	Microsoft.Compute/virtualMachines/delete
Correlation ID	f15f9e51-af6a-4dfa-a0bb-79e5d0e44fa1
Level	Informational
Resource ID	/subscriptions/d690b447-1036-4d22-b055-a8625e53fd5/resourceGroups/CST8912/providers/Microsoft.Com

16. On the Azure portal resource menu, select Monitor, and then select Alerts in the menu on the left.



The screenshot shows the Microsoft Azure Monitor Alerts interface. The left sidebar has 'Alerts' selected. The main area displays alert statistics: Total alerts (3), Critical (0), Error (0), Warning (0), Informational (0), and Verbose (3). Below this is a table of alerts:

Name	Severity	Affected resource	Alert condition	User response	Fire time
VM was deleted	4 - Verbose	az104-vm0	Fired	New	11/5/2024, 11:03 PM
VM was deleted	4 - Verbose	az104-vm0	Fired	New	11/5/2024, 11:03 PM
VM was deleted	4 - Verbose	az104-vm0	Fired	New	11/5/2024, 11:03 PM

17. You should have verbose alerts that were generated by deleting vm0.

18. Note: It can take a few minutes for the alert email to be sent and for the alerts to be updated in the portal. If you don't want to wait, continue to the next task and then return.

19. Select the name of one of the alerts (For example, VM was deleted). An Alert details pane appears that shows more details about the event.

Microsoft Azure Search resources, services, and docs (G+) Copilot shak0039@algonquinlive... ALGONQUIN COLLEGE (ALGONQ...

Monitor | Alerts

New: We value your feedback! Please take a moment to let us know what you think.

Alerts

Total alerts: 3 Critical: 0 Error: 0

Name ↑	Severity ↑
VM was deleted	4 - Verbose
VM was deleted	4 - Verbose
VM was deleted	4 - Verbose

Showing 1 - 3 of 3 results.

VM was deleted

Activity log alert details

[Copy link](#) [Go to alert rule](#) [Investigate \(preview\)](#)

Summary History

General details

Severity	Fired time	Affected resource	Monitor service
4 - Verbose	11/5/2024, 11:03 PM	az104-vm0	ActivityLog Administrative

Alert condition: Fired User response: New

The target resource az104-vm0 has been moved or deleted.

Why did this alert fire?

The following event occurred: Microsoft.Compute/virtualMachines/delete

Event level: Informational Category: Administrative Initiated by: shak0039@algonquinlive.co

[Additional details](#)

Microsoft Azure Search resources, services, and docs (G+) Copilot shak0039@algonquinlive... ALGONQUIN COLLEGE (ALGONQ...

Monitor | Alerts

New: We value your feedback! Please take a moment to let us know what you think.

Alerts

Total alerts: 3 Critical: 0 Error: 0

Name ↑	Severity ↑
VM was deleted	4 - Verbose
VM was deleted	4 - Verbose
VM was deleted	4 - Verbose

Showing 1 - 3 of 3 results.

VM was deleted

Activity log alert details

[Copy link](#) [Go to alert rule](#) [Investigate \(preview\)](#)

Summary History

General details

Severity	Fired time	Affected resource	Monitor service
4 - Verbose	11/5/2024, 11:03 PM	az104-vm0	ActivityLog Administrative

Alert condition: Fired User response: New

The target resource az104-vm0 has been moved or deleted.

Why did this alert fire?

The following event occurred: Microsoft.Compute/virtualMachines/delete

Event level: Informational Category: Administrative Initiated by: shak0039@algonquinlive.co

[Additional details](#)

The screenshot shows the Microsoft Azure Monitor Alerts interface. On the left, there's a sidebar with links like Overview, Activity log, Alerts (which is selected), Metrics, Logs, Change Analysis, Service health, Workbooks, Investigator (preview), Insights, Managed Services, Settings, and Support + Troubleshooting. The main area has a search bar and a message: "New: We value your feedback! Please take a moment to provide us with your thoughts." Below this, it says "VM was deleted" and "Activity log alert details". It includes buttons for "Copy link", "Go to alert rule", and "Investigate (preview)". There are tabs for "Summary" and "History". Under "General details", it shows Severity (4 - Verbose), Fired time (11/5/2024, 11:03 PM), Affected resource (az104-vm0), Monitor service (ActivityLog Administrative), Alert condition (Fired), and User response (New). A note says "The target resource az104-vm0 has been moved or deleted." Below this, a section titled "Why did this alert fire?" lists the event as Microsoft.Compute/virtualMachines/delete, with Event level (Informational), Category (Administrative), and Initiated by (shak0039@algonquinlive.co). There's also a link to "Additional details". At the bottom, it says "Showing 1 - 3 of 3 results."

Task 5: Configure an alert processing rule

1. In this task, you create an alert rule to suppress notifications during a maintenance period.
2. Continue in the Alerts blade, select Alert processing rules and then + Create.

The screenshot shows the Microsoft Azure Alert processing rules blade. At the top, there are buttons for "+ Create", "Columns", "Refresh", "Open", and "Select one or all resource groups in the specified subscription". Below this is a search bar and filters for Subscription (2 selected), Resource group (all), Target scope (all), Status (Enabled), Rule type (all), and Add tag filter. A table header includes columns for Name, Scope, Filter, Rule type, Scheduling, and Status. In the center, there's a large exclamation mark icon and the text "No alert processing rules found". Below this, a message says "Try changing your search or choose a different scope level if you don't see what you're looking for." with a "Clear filters" button.

3. Select your resource group, then select Apply.

Select a scope

Browse

⚠ You may only choose items from the same subscription.

Subscription	Resource types
All subscriptions	All resource types

Search to filter items...

Scope	Resource type	Location
> AVD-Prod	Subscription	-
> Azure for Students	Subscription	-
<input checked="" type="checkbox"/> > CST8912	Resource group	-
> DefaultResourceGroup-EUS	Resource group	-
> NetworkWatcherRG	Resource group	-

Selected scopes 1 scope

Resource group
CST8912

Apply **Cancel** **Clear all selections**

Create an alert processing rule

Scope

Use alert processing rules to decide what happens when an alert is triggered, like suppressing notifications or applying specific actions to certain types of alerts.
[Learn more](#)

Scope

This rule will apply to alerts that are triggered on the resources you select.

+ Select scope

Resource	Hierarchy
CST8912	Azure for Students

Filter

Filters	Operator	Value

Review + create **Previous** **Next: Rule settings >**

4. Select Next: Rule settings, then select Suppress notifications.

The screenshot shows the Microsoft Azure interface for creating an alert processing rule. The 'Rule settings' tab is active. Two options are available under 'Rule type': 'Suppress notifications' (selected) and 'Apply action group'. Below each option is a brief description. At the bottom, there are navigation buttons: 'Review + create' (highlighted in blue), 'Previous', and 'Next: Scheduling >'. The top navigation bar includes 'Microsoft Azure', a search bar, 'Copilot', and user information.

5. Select Next: Scheduling.
6. By default, the rule works all the time, unless you disable it or configure a schedule. You are going to define a rule to suppress notifications during overnight maintenance. Enter these settings for the scheduling of the alert processing rule:

Setting	Value
Apply the rule	At a specific time
Start	Enter today's date at 10 pm.
End	Enter tomorrow's date at 7 am.
Time zone	Select the local timezone.

Screenshot of the scheduling section of an alert processing rule

The screenshot shows the 'Create an alert processing rule' page in the Microsoft Azure portal. The 'Scheduling' tab is selected. The 'Apply the rule' section has 'At a specific time' selected. The 'Start' date is set to 11/05/2024 at 10:00 PM, and the 'End' date is set to 11/06/2024 at 7:00 AM. The 'Time zone' is set to '(UTC-05:00) Eastern Time (US & Canada)'. A preview below shows the full range from 10:00 p.m. on 11/05/2024 to 7:00 a.m. on 11/06/2024. At the bottom are buttons for 'Review + create', 'Previous', and 'Next: Details >'.

7. Select Next: Details and enter these settings:

Setting	Value
Resource group	CST8912
Rule name	Planned Maintenance
Description	Suppress notifications during planned maintenance.

Microsoft Azure Search resources, services, and docs (G+)

Home > Monitor | Alerts > Alert processing rules > Create an alert processing rule ...

Scope Rule settings Scheduling **Details** Tags Review + create

Select the subscription and resource group in which to save the alert processing rule.

Project details

Subscription: Azure for Students
 Resource group: CST8912 [Create new](#)

Alert processing rule details

Rule name: Planned Maintenance
 Description: Suppress notifications during planned maintenance.
 Enable rule upon creation

[Review + create](#) [Previous](#) [Next: Tags >](#)

8. Select Review + create to validate your input, then select Create.

Microsoft Azure Search resources, services, and docs (G+)

Home > Monitor | Alerts > Alert processing rules > Create an alert processing rule ...

Scope
 Resource: Azure for Students > CST8912

Rule settings
 Rule type: Suppress notifications

Scheduling
 Apply the rule: At a specific time
 From 2024-11-05 at 10:00 p.m. to 2024-11-06 at 7:00 a.m. (UTC-05:00 Eastern Time US & Canada)

Details

Subscription	Azure for Students
Resource group	CST8912
Name	Planned Maintenance
Description	Suppress notifications during planned maintenance.
Enable rule upon creation	<input checked="" type="checkbox"/>

[Create](#) [Previous](#)

Create alert processing rule
Alert processing rule created successfully

No alert processing rules found
Try changing your search or choose a different scope level if you don't see what you're looking for.

Task 6: Use Azure Monitor log queries

9. In this task, you will use Azure Monitor to query the data captured from the virtual machine.
10. In the Azure portal, search for and select Monitor blade, click Logs.

New Query 1 +

Always show Queries hub | Community Git repo | Documentation

Resource type : Virtual machines

VIRTUAL MACHINES

All Queries

Virtual machines

Count heartbeats
Last heartbeat of each computer

Ingestion latency (end-to-end) spikes - ...
Agent latency spikes - Heartbeat table

11. If necessary close the splash screen.

Microsoft Azure

Home > Monitor

Monitor | Logs

New Query 1 +

CST8912 Select scope

Run Time range : Last 24 hours

Try the new Log Analytics Feedback Queries hub

Save Share New alert rule Export Pin to

Tables Queries Functions ...

Search Filter Group by: Resource type

1 Type your query here or click one of the queries to start

Overview Activity log Alerts Metrics Logs Change Analysis Service health Workbooks Investigator (preview) Insights Managed Services Settings Support + Troubleshooting

Favorites You can add favorites by clicking on the star icon

- Virtual machines
 - Heartbeat
 - InsightsMetrics

Collapse all

Query history

No queries history

You haven't run any queries yet. To start, go to Queries on the side pane or type a query in the query editor.

12. Select a scope, your resource group. Select Apply.

Microsoft Azure

Home > Monitor

Monitor | Logs

New Query 1 +

CST8912 Select scope

Subscription: All subscriptions Resource group: All resource groups Resource types: All resource types Locations: All locations

Search to filter items...

Scope	Resource type	Location
<input type="checkbox"/> Azure for Students	Subscription	-
<input checked="" type="checkbox"/> CST8912	Resource group	-
<input type="checkbox"/> DefaultResourceGroup-EUS	Resource group	-
<input type="checkbox"/> AVD-Prod	Subscription	-

Selected scopes 1 scope

CST8912 Resource group -

Apply Cancel Clear all selections

13. In the Queries tab, select Virtual machines (left pane).

The screenshot shows the Microsoft Azure Monitor Logs interface. On the left, there's a sidebar with various monitoring options like Overview, Activity log, Alerts, Metrics, and Logs (which is selected). The main area has a search bar at the top and a 'New Query 1' card. Below it, there's a 'Select scope' dropdown set to 'CST8912'. The 'Queries' tab is active, showing a placeholder 'Type your query here or click one of the queries to start'. A 'Filter' dialog is open, showing 'Resource type : Virtual machines'. The right side of the screen displays a message 'No queries history' with a note: 'You haven't run any queries yet. To start, go to Queries on the side pane or type a query in the query editor.'

14. Review the queries that are available. Run (hover over the query) the Count heartbeats query.

This screenshot shows the same Azure Monitor Logs interface as the previous one, but now the 'Queries' tab is active and the search bar contains the text 'heartbeats'. A list of available queries is shown, with 'Count heartbeats' highlighted. A detailed view of this query is displayed on the right: 'Description' (Count all computers heartbeats from the last hour), 'Information' (Example query - Created by Microsoft), and 'Tags' (Resource type: Virtual machines, Category: Azure Monitor, Topic: Availability, Query type: Example queries). The right side still shows the 'No queries history' message.

15. You should receive a heartbeat count for when the virtual machine was running.

The screenshot shows the Microsoft Azure Monitor Log Analytics interface. On the left, there's a navigation sidebar with options like Overview, Activity log, Alerts, Metrics, and Logs (which is selected). The main area has a search bar at the top and a 'New Query 1*' tab. Below it, a table shows the results of a query:

```

1 // Count heartbeats
2 // Count all computers heartbeats from the last hour.
3 // Count computers heartbeats in the last hour.
4 // Normally, agents on VMs generate Heartbeat event every minute.
5 Heartbeat
6 | where TimeGenerated > ago(1h)
7 | summarize count() by Computer

```

	Computer	count
az104-vm0	17	
Computer	az104-vm0	
	count	17

At the bottom, it says '3s 271ms' and 'Display time (UTC+00:00)'. There are also 'Query details' and '1 - of 1' links.

16. Review the query. This query uses the heartbeat table.

This screenshot is similar to the previous one but shows a chart instead of a table. The chart displays the count of heartbeats for the computer 'az104-vm0' over time. The Y-axis is labeled 'count' and ranges from 0 to 20. The X-axis shows a single data point for 'az104-vm0' under the 'Computer' category. The chart title is 'count'.

17. Replace the query with this one, and then click Run. Review the resulting chart.

InsightsMetrics

```

| where TimeGenerated > ago(1h)
| where Name == "UtilizationPercentage"

```

| summarize avg(Val) by bin(TimeGenerated, 5m), Computer //split up by computer
 | render timechart

The screenshot shows the Microsoft Azure Monitor Logs interface. On the left, there's a sidebar with navigation links like Overview, Activity log, Alerts, Metrics, and Logs (which is selected). The main area has a search bar and a 'New Query' button. A query editor window is open with the following Kusto query:

```

5 //Heartbeat
6 ||| where TimeGenerated > ago(1h)
7 ||| summarize count() by Computer
8
9 InsightsMetrics
10 | where TimeGenerated > ago(1h)
11 | where Name == "UtilizationPercentage"
12 | summarize avg(Val) by bin(TimeGenerated, 5m), Computer //split up by computer
13 | render timechart
14

```

The status bar at the bottom says 'Running your query... 00:07'. There are 'Results' and 'Chart' tabs, and a 'Stop query' button.

The screenshot shows the same interface after the query has completed. The status bar now says '00:07'. The 'Results' tab is selected, displaying a table with three rows of data:

TimeGenerated [UTC]	Computer	avg.Val
> 11/6/2024, 3:50:00.000 AM	az104-vm0	0.2159266000000002
> 11/6/2024, 3:45:00.000 AM	az104-vm0	0.2223134
> 11/6/2024, 3:40:00.000 AM	az104-vm0	0.5073934

At the bottom, it says '12s 822ms | Display time (UTC+00:00)' and 'Query details | 1 - 3 of 3'.



Microsoft Azure

Search resources, services, and docs (G+)

Copilot

shak0039@algonquinlive...
ALGONQUIN COLLEGE (ALGON...)

Home > Monitor

Monitor | Logs

Microsoft

Search

Overview

Activity log

Alerts

Metrics

Logs

Change Analysis

Service health

Workbooks

Investigator (preview)

> Insights

> Managed Services

> Settings

> Support + Troubleshooting

New Query 1*

CST8912

Select scope

Run

Time range : Set in query

Save Share New alert rule Export

Try the new Log Analytics Feedback Queries hub

Tables Queries Functions ...

heartbeats

1 Filter Group by: Resource type

Collapsible sidebar

InsightsMetrics
| where TimeGenerated > ago(1h)
| summarize count() by Computer
8
9 InsightsMetrics
10 | where TimeGenerated > ago(1h)
11 | where Name == "UtilizationPercentage"
12 | summarize avg(Val) by bin(TimeGenerated, 5m), Computer //split up by computer
13 | render timechart
14

Results Chart

Avg Val

3:40 AM 3:45 AM 3:50 AM

TimeGenerated [UTC]

az104-vm0

Chart formatting

12s 822ms Display time (UTC+00:00) Query details 3 records

18. As you have time, review and run other queries.

The screenshot shows the Microsoft Azure Monitor Logs interface. The left sidebar is titled "Monitor | Logs" and includes links for Overview, Activity log, Alerts, Metrics, Logs (which is selected), Change Analysis, Service health, Workbooks, Investigator (preview), Insights, Managed Services, Settings, and Support + Troubleshooting. The main area has a search bar at the top with the placeholder "Search resources, services, and docs (G+)" and a "Copilot" button. Below the search bar is a "New Query 1*" card with a scope set to "CST8912". The "Queries" tab is selected. A code editor window displays the following Log Analytics query:

```
| where query_time_d > 10 //You may change the time threshold  
| where _object_type == "DataTransferOperations"  
// Terminal object state  
// And objects that have been completed. Can be used to find if transfer completed successfully or  
in error state.  
| where Status == "Rejected"  
or Status == "Delivered"  
or Status == "Failed"  
| limit 100
```

The results pane shows a single error message: "'where' operator: Failed to resolve table or column expression named 'DataTransferOperations'".

19. Clean up the resources and document all the steps in the lab report

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Home > Resource groups >

Resource groups

Algonquin College (AlgonquinLive.com.onmicrosoft.com)

- + Create
- ... Group by none
- Search
- Overview
- Activity log
- Access control (IAM)
- Tags
- Resource visualizer
- Events
- > Settings
- > Cost Management
- > Monitoring
- > Automation
- > Help
- ② Support + Troubleshooting

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Name ↑
<input type="checkbox"/> CST8912
<input type="checkbox"/> DefaultResourceGroup-EUS
<input type="checkbox"/> NetworkWatcherRG

Showing 1 - 3 of 3. Display 10 of 1

Delete a resource group

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted

CST8912

Dependent resources to be deleted (9)

All dependent resources, including hidden types, are shown

Name
<input type="checkbox"/> Alert the operations team
<input type="checkbox"/> az104-nic0
<input type="checkbox"/> az104-nsg01
<input type="checkbox"/> az104-pip0
<input type="checkbox"/> az104-vm0_disk1_ea02f15ef9114f4e8a4...
<input type="checkbox"/> az104-vnet
<input type="checkbox"/> az10411mihul5wmmnkwj6
<input type="checkbox"/> Planned Maintenance

Delete confirmation

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

Delete **Go back**

Enter resource group name to confirm deletion *
CST8912

Delete **Cancel**

Microsoft Azure Search resources, services, and docs (G+) Copilot shak0039@algonquinlive... ALGONQUIN COLLEGE (ALGONQ...

Home > Resource groups >

CST8912

Resource group

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

> Settings

> Cost Management

> Monitoring

> Automation

> Help

② Support + Troubleshooting

Notifications

More events in the activity log → Dismiss all

- Deleted resource group CST8912 Deleted resource group CST8912 a minute ago
- Create alert processing rule Alert processing rule created successfully 16 minutes ago
- Executed delete command on 1 selected items Succeeded: 1, Failed: 0, Canceled: 0. 50 minutes ago

Resources **Recommendations**

Filter for any field... Type equals all Add filter More (1)

Showing 1 to 9 of 9 records. Show hidden types No grouping

Name ↑	Type ↑	Location ↑
<input type="checkbox"/> Alert the operations team	Action group	Global
<input type="checkbox"/> az104-nic0	Network Interface	Canada Central
<input type="checkbox"/> az104-nsg01	Network security group	Canada Central
<input type="checkbox"/> az104-pip0	Public IP address	Canada Central
<input type="checkbox"/> az104-vm0_disk1_ea02f15ef9114f4e8a4...	Disk	Canada Central
<input type="checkbox"/> az104-vnet	Virtual network	Canada Central
<input type="checkbox"/> az10411mihul5wmmnkwj6	Storage account	Canada Central

Page 1 of 1

Microsoft Azure Search resources, services, and docs (G+) Copilot shak0039@algonquinv... ALGONQUIN COLLEGE (ALGONQ...

Home > Resource groups >

Resource groups

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+ Create ... Group by none

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Name	Type	Location	... More
DefaultResourceGroup-EUS	Resource group	East US	...
NetworkWatcherRG	Resource group	East US	...

Search Search Essentials

DefaultResourceGroup-EUS Resource group

Overview Activity log Access control (IAM) Tags Resource visualizer Events Settings Cost Management Monitoring Automation Help Support + Troubleshooting

Resources Recommendations

Showing 1 to 2 of 2 records. Show hidden types

Name	Type	Location	... More
DefaultWorkspace-d690b447-1036-4d22-b055-a8625e5...	Log Analytics workspace	East US	...
MSVMI-DefaultWorkspace-d690b447-1036-4d22-b055...	Data collection rule	East US	...

Delete a resource group

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted

DefaultResourceGroup-EUS

Dependent resources to be deleted (2)

All dependent resources, including hidden types, are shown

Name
DefaultWorkspace-d690b447-1036-4d22-b055-a8625e5...
MSVMI-DefaultWorkspace-d690b447-1036-4d22-b055...

Delete confirmation

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

Delete Go back

Enter resource group name to confirm deletion *

DefaultResourceGroup-EUS

Delete Cancel

Microsoft Azure Search resources, services, and docs (G+) Copilot shak0039@algonquinv... ALGONQUIN COLLEGE (ALGONQ...

Home > Resource groups >

Resource groups

Algonquin College (AlgonquinLive.com.onmicrosoft.com)

+ Create ... Group by none

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Name	Type	Location	... More
DefaultResourceGroup-EUS	Resource group	East US	...
NetworkWatcherRG	Resource group	East US	...

Search Search Essentials

DefaultResourceGroup-EUS Resource group

Overview Activity log Access control (IAM) Tags Resource visualizer Events Settings Cost Management Monitoring Automation Help Support + Troubleshooting

Resources Recommendations

Showing 1 to 1 of 1 records. Show hidden types

Name	Type	Location	... More
DefaultWorkspace-d690b447-1036-4d22-b055-a8625e5...	Log Analytics workspace	East US	...

Deleted resource group
DefaultResourceGroup-EUS

Deleted resource group DefaultResourceGroup-EUS

Give feedback

The screenshot shows the Microsoft Azure Resource Groups page for the resource group "NetworkWatcherRG". The left sidebar lists "Resource groups" and "NetworkWatcherRG". The main area displays the "Overview" tab of the resource group, showing tabs for "Essentials", "Resources", and "Recommendations". Under "Resources", there is one item: "NetworkWatcher_canadacentral" (Network Watcher). A modal window titled "Delete a resource group" is open, asking for confirmation to delete the resource group. The modal shows the name "NetworkWatcherRG" and a "Delete" button.

The screenshot shows the Microsoft Azure Resource Groups page for the resource group "NetworkWatcherRG". The left sidebar lists "Resource groups" and "NetworkWatcherRG". The main area displays the "Overview" tab of the resource group, showing tabs for "Essentials", "Resources", and "Recommendations". Under "Resources", there is no content. A success message "Deleted resource group NetworkWatcherRG" is displayed in the top right corner. The status bar at the bottom right says "Deleted resource group NetworkWatcherRG".

Lab Report

In this lab, I learned how cloud architecture can be more cost-effective, and how to monitor by using Azure's native tools, such as Azure Monitor and Log Analytics. After provisioning a virtual machine using a template, I learned to set up an alert that monitors all deletions of virtual



machines within the resource group, and this is notified through an action group that sends email alerts. To confirm functionality, I deleted the test virtual machine and successfully received a notification. Then, I was able to create an alert processing rule in order to suppress notifications during scheduled maintenance hours, which is beneficial because it reduces any unnecessary alerts. Using Log Analytics, I learned to query the heartbeat and utilization metrics in order to view the insights of the resource performance and identify potential cost-saving measures. This lab truly emphasized the importance of using cloud-native monitoring and cost-tracking tools, and it helped to grow my overall understanding of Azure.