Lab Report: CST8912 Graded Lab Activity #11

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Course: CST8912_011

Title

Monitoring and Alert Setup for Azure Cloud Resources

Introduction or Purpose

The purpose of this lab was to explore cloud monitoring and alerting capabilities in Microsoft Azure. The main objective was to create and configure resources in Azure, including a virtual machine, storage account, and Azure Data Factory, all in the Canada Central region. The lab focused on setting up monitoring tools such as uptime checks, alert policies, CPU metric charts, and log queries using Azure Monitor and Log Analytics. Additionally, diagnostic settings and alerts were configured for Azure Data Factory to ensure proper monitoring of its activities. This lab aimed to demonstrate the ability to manage and monitor cloud resources effectively, ensuring timely notifications for critical events like resource downtime or activity failures.

Steps Covered in the Lab

Step 1: Create Virtual Machine and Storage Account

- Logged into the Azure portal and created a resource group named "Lab11Group".
- Created a virtual machine named "Lab11VM" in the Canada Central region with the lowest memory option (B1s size) and a Windows Server 2019 image.
- Created a storage account named "lab11storage123" in the same region with standard performance and locally-redundant storage (LRS).

Lab11VM
Virtual machine

🔍 Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Resource visualizer
- › Connect
- › Networking
- › Settings
- › Availability + scale
- › Security
- › Backup + disaster recovery
- › Operations
- › Monitoring
- › Automation
- › Help

🔲 Help me copy this VM in any region

▷ Connect ⌄ ▷ Start ↻ Restart ☐ Stop ⏱ Hibernate 📷 Capture ⌄ 🗑 Delete ↻ Refresh 📱 Open in mobile ⌨ Feedback ▣ CLI / PS

⌃ Essentials   JSON View

Resource group (move)   Operating system
Lab11Group   Windows (Windows Server 2019 Datacenter)

Status   Size
Running   Standard B1s (1 vcpu, 1 GiB memory)

Location   Public IP address
Canada Central (Zone 1)   4.172.206.236

Subscription (move)   Virtual network/subnet
Azure for Students   Lab11VM-vnet/default

Subscription ID   DNS name
913a8401-361d-4f42-8d7d-e2ff44f75da2   Not configured

Availability zone   Health state
1   -

                                                  Time created
                                                  4/2/2025, 8:14 PM UTC

Tags (edit)
Add tags

| Properties | Monitoring | Capabilities (8) | Recommendations | Tutorials |

🖥 **Virtual machine**   🌐 **Networking**

Computer name   Lab11VM   Public IP address   4.172.206.236 (Network   lab11vm221_z1)
                                                                          interface
Operating system   Windows (Windows Server 2019 Datacenter)
                                                  Public IP address (IPv6) -
VM generation   V2
                                                  Private IP address   10.0.0.4
VM architecture   x64

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lab11storage123
Storage account

🔍 Search

- Overview
- Activity log
- Tags
- Diagnose and solve problems
- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Storage Mover
- Partner solutions
- Resource visualizer
- ⌄ Data storage
  - Containers
  - File shares
  - Queues
  - Tables
- › Security + networking
- › Data management
- › Settings
- › Monitoring

⬆ Upload ⬛ Open in Explorer 🗑 Delete → Move ⌄ ⋯

⌃ Essentials   JSON View

Resource group (...   : Lab11Group
Location   : canadacentral
Subscription (move)   : Azure for Students
Subscription ID   : 913a8401-361d-4f42-8d7d-e2ff44f75da2
Disk state   : Available
Performance   : Standard 📋
Replication   : Locally-redundant storage (LRS)
Account kind   : StorageV2 (general purpose v2)
Provisioning state   : Succeeded
Created   : 2025/4/2 16:19:43

Tags (edit)   : Add tags

| Properties | Monitoring | Capabilities (7) | Recommendations (0) |
| Tutorials | Tools + SDKs |

🟩 **Blob service**   🔒 **Security**

Hierarchical namespace   Require secure transfer for REST API
Disabled   operations
                                            Enabled
Default access tier
Hot   Storage account key access
                                            Enabled
Blob anonymous access
Disabled   Minimum TLS version
                                            Version 1.2

Step 2: Create an Uptime Check

- Navigated to "Monitor" > "Alerts" in the Azure portal.
- Created a new alert rule for "Lab11VM", selecting the "Availability" condition with a threshold of 0 to detect downtime.
- Named the alert rule "VMUptimeCheck" and saved it.

VMUptimeCheck ☆ ⋯
Metric alert rule

🔍 Search   ↕ «

🔳 Overview	
📋 Activity log	
👥 Access control (IAM)	
🏷️ Tags	
🔧 Diagnose and solve problems	
🕐 History	
🔗 Resource visualizer	
> Settings	
> Alert rule configuration	
> Automation	
> Help	

✏️ Edit   ☐ Disable   📋 Duplicate   🗑️ Delete   🔄 Refresh

∧ Essentials   JSON View

Resource group (move)   Severity
Lab11Group   🔵 3 - Informational

Location (move)   Description
Global   Alert when VM is down

Subscription (move)
Azure for Students

Subscription ID
913a8401-361d-4f42-8d7d-e2ff44f75da2

Tags (edit)
Add tags

Scope

Resource ∨	Hierarchy
🖥️ lab11vm	🔑 Azure for Students > 🔲 lab11group

Conditions

Name	Time series monitored ⓘ	Estimated monthly cost ⓘ
VmAvailabilityMetric < 0	1	$0.10

Step 3: Define an Alert Policy

- Created another alert rule for "Lab11VM" to monitor CPU usage.
- Selected the "Percentage CPU" signal, set the condition to "Greater than 80%", and named the alert "HighCPUAlert".
- Reused the "VMUptimeCheck" action group for notifications.

HighCPUAlert ☆ ⋯
Metric alert rule

🔍 Search

- ! **Overview**
- 🗎 Activity log
- 🔑 Access control (IAM)
- 🏷 Tags
- 🔧 Diagnose and solve problems
- 🕐 History
- 🕸 Resource visualizer
- › Settings
- › Alert rule configuration
- › Automation
- › Help

✏️ Edit   ☐ Disable   🗇 Duplicate   🗑 Delete   ↻ Refresh

∧ **Essentials**   JSON View

Resource group (...   : Lab11Group
Location (move)   : Global
Subscription (move)   : Azure for Students
Subscription ID   : 913a8401-361d-4f42-8d7d-e2ff44f75da2
Severity   : 🔵 3 - Informational
Description   : -

Tags (edit)   : Add tags

Scope

Resource ∨	Hierarchy
🖥 lab11vm	🔑 Azure for ... > 🌐 lab11group

Conditions

Name	Time series monitored ⓘ	Estimated monthly cost ⓘ
Percentage CP...	1	$0.10

Alert rules ⋯   ✕

+ Create | ☰ Columns | ↻ Refresh | ↓ Export to CSV | ⌕ Open query | 🗑 Delete | ▷ Enable | ☐ Disable

🔍 Search | Subscription : **2 selected** | Target scope : **all** | Target resource type : **all** | Signal type : **all** | ＋ Add tag filter | ∨ More (2) | No grouping ∨

Name ↑↓	Condition	Severity ↑↓	Target scope	Target resource type	Signal type ↑↓	Status ↑↓	
☐ HighCPUAlert	Percentage CPU > 80	3 - Informational	Lab11VM	Virtual machine	Metrics	✅ Enabled	⋯
☐ VMUptimeCheck	VmAvailabilityMetric < 0	3 - Informational	Lab11VM	Virtual machine	Metrics	✅ Enabled	⋯

Step 4: Create a CPU Metrics Chart

- In "Monitor" > "Metrics", selected "Lab11VM" and added a chart for "Percentage CPU" with an average aggregation over the last 24 hours.
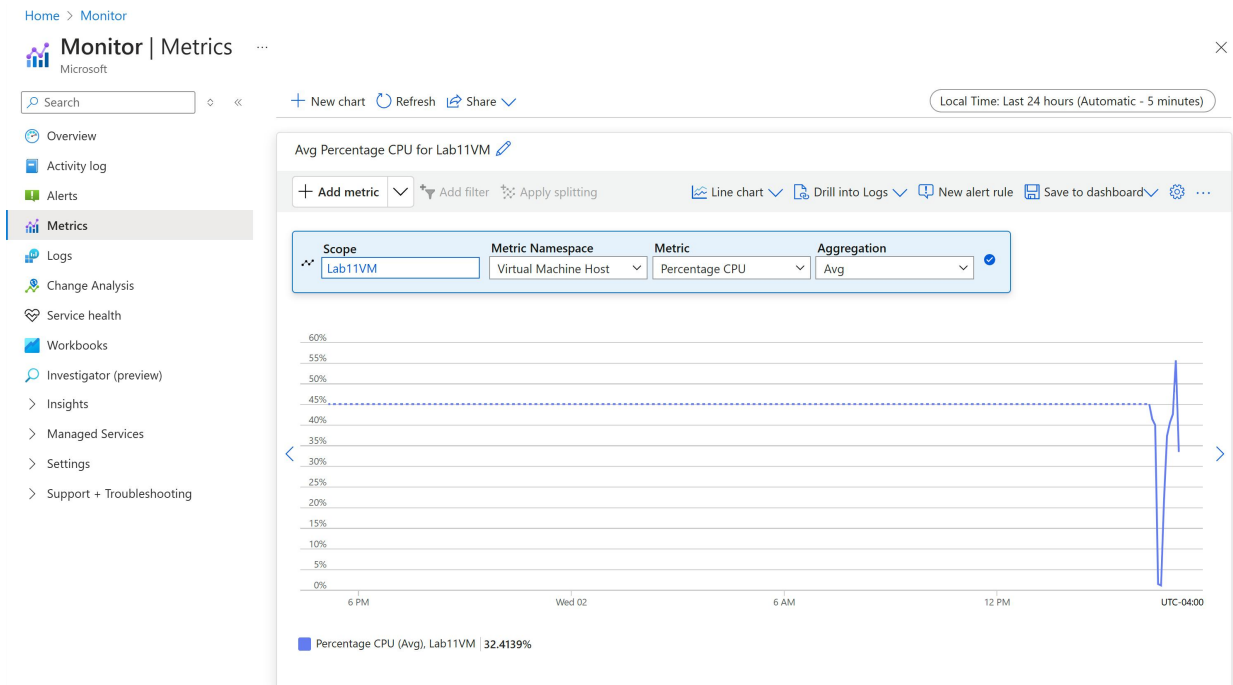
Step 5: Use Log Queries to Interact with Data

- In "Monitor" > "Logs", selected "Lab11VM" and ran the query: Perf | where ObjectName == "Processor" and CounterName == "% Processor Time" | summarize avg(CounterValue) by bin(TimeGenerated, 1h) to view CPU usage data.

Step 6: Create Azure Data Factory

- Created an Azure Data Factory named "Lab11DataFactory" in the Canada Central region under the "Lab11Group" resource group.

Step 7: Create Azure Log Analytics Workspace

- Created a Log Analytics workspace named "Lab11LogAnalytics" in the Canada Central region under the same resource group.

Step 8: Configure Diagnostic Settings for Azure Data Factory

- In "Lab11DataFactory", added a diagnostic setting named "DFDiagnostics", enabling "AllMetrics" and "AllLogs", and sent the data to "Lab11LogAnalytics".

Step 9: Create and Review a Log Solution for Azure Data Factory

- In "Lab11LogAnalytics" > "Logs", ran the query: ADFPipelineRun | summarize count() by PipelineName to check pipeline run data (result was empty as no pipelines were run).

Step 10: Setup Monitor Alerts for Azure Data Factory

- Created an alert rule named "DFAlert" for "Lab11DataFactory", using the "Failed activity runs metrics" signal with a threshold of 1, and reused the "VMUptimeCheck" action group.

Step 11: Delete All Resources

- Deleted the "Lab11Group" resource group, which removed all created resources.

Recent

Manage view ∨   ⟳ Refresh   ↓ Export to CSV   ✕ Clear | ⌀ Assign tags   ☰ Group by none ∨

▽ Filter for any field...   Subscription equals **all**   Resource Group equals **all** ✕   Type equals **all** ✕   Location equals **all** ✕   + Add filter

☐ Name ↑		Type	Location	Resource Group	Subscription	Last accessed
☐ 🔑 Azure for Students	⋯	Subscription			Azure for Students	2个月前
☐ 🔑 AVD-Prod	⋯	Subscription			AVD-Prod	2个月前

Showing 1 - 2 of 2. Display count: auto ∨   ⧉ Give feedback