

1. Create appropriate Azure resources to utilize Application Insights and Azure Log Analytics.

As evidence, provide a screenshot of the resource group containing your running resources.

Home >

acdnd-c4-project

Resource group

Search (Ctrl+/)

+ Add

Edit columns

Delete resource group

Refresh

Export to CSV

Open query

Assign tags

Move

Delete

Export template

Feedback

Open in mobile

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Deployments

Security

Policies

Properties

Locks

Cost Management

Cost analysis

Cost alerts (preview)

Budgets

Advisor recommendations

Monitoring

Insights (preview)

Alerts

Metrics

Diagnostic settings

Logs

Advisor recommendations

Workbooks

Essentials

Subscription (change) : Azure subscription 1

Subscriptions ID : ed524622-3c29-461b-b7f3-a27513e937fe

Tags (change) : Click here to add tags

Deployments : 7 Succeeded

Location : East US

Filter for any field...

Type == all

Location == all

Add filter

Showing 1 to 15 of 15 records.

Show hidden types

Name	Type
PrjAutoAcct	Automation Account
ProjectAppInsights	Application Insights
projectLogAnalysisWorkspace	Log Analytics workspace
ProjectRunBook (PrjAutoAcct/ProjectRunBook)	Runbook
StopAzureV2Vm (PrjAutoAcct/StopAzureV2Vm)	Runbook
storageaccountmt22	Storage account
udacity-cluster	Kubernetes service
udacity-vmss	Virtual machine scale set
udacity-vmss-lb	Load balancer
udacity-vmss-lbPublicIP	Public IP address
udacity-vmss-nsg	Network security group
udacity-vmss-vnet	Virtual network
udacitydiag25809	Storage account
VMInsights(projectloganalysisworkspace)	Solution
VMSTOPALERT (PrjAutoAcct/VMSTOPALERT)	Runbook

2. Enable Application Insights for a VM Scale Set.

As evidence, provide a screenshot of the metrics from the VM Scale Set instance. This should show the following information:

- CPU %
- Available Memory %
- Information about the Disk
- Information about the bytes sent and received.

Home > aks-nodepool1-25341624-vmss > Insights >

Insights

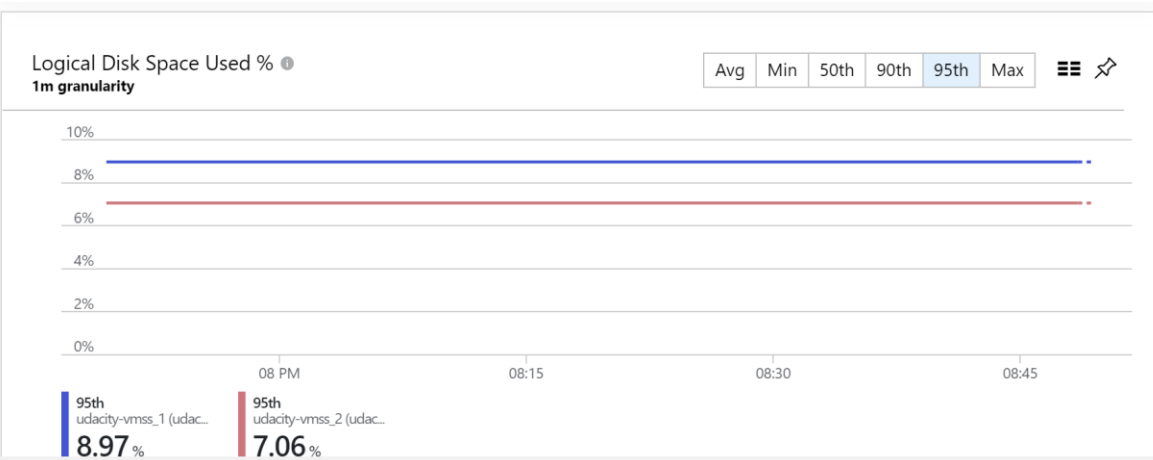
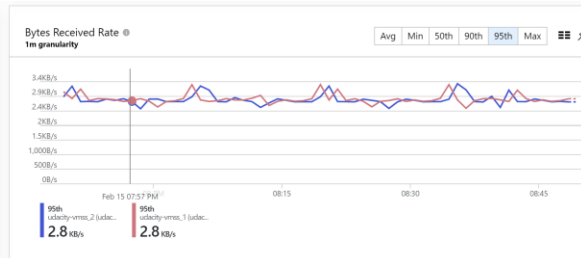
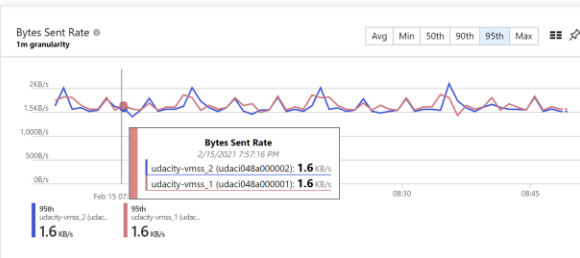
Resource Group Monitoring Azure Monitor Refresh Provide Feedback

Performance Map

Time range: Last hour as of 15 Feb 20:49

View Workbooks

Top N Charts Aggregate Charts Top N List



Search (Ctrl+/)

Tags

Diagnose and solve problems

Settings

Instances

Networking

Scaling

Disks

Operating system

Security

Size

Extensions

Continuous delivery

Configuration

Upgrade policy

Health and repair

Identity

Properties

Locks

Monitoring

Insights

Alerts

Start Restart Stop Move Delete Refresh

Essentials

Resource group (change) : MC_acndd-c4-project_udacity-cluster_eastus

Status : 1 out of 1 succeeded

Location : East US

Subscription (change) : Azure subscription 1

Subscription ID : ed524622-3c29-461b-b7f9-a27513e937fe

Tags (change) : aksEngineVersion : v0.47.0-aks-gomod-b4-aks creationSource : aks-aks-nodepool1-25341624-vmss orchestrator : Kubernetes:1.18.14 poolName : nodepool1 resourceNameSuffix : 25341624

Operating system : Linux

Size : Standard_DS2_v2 (1 instance)

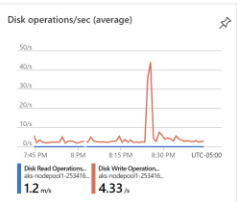
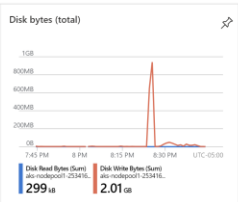
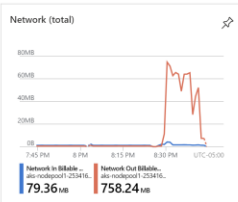
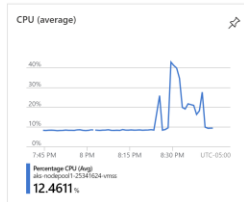
Public IP address : 52.188.27.30, 1 more

Public IP address (IPv6) : -

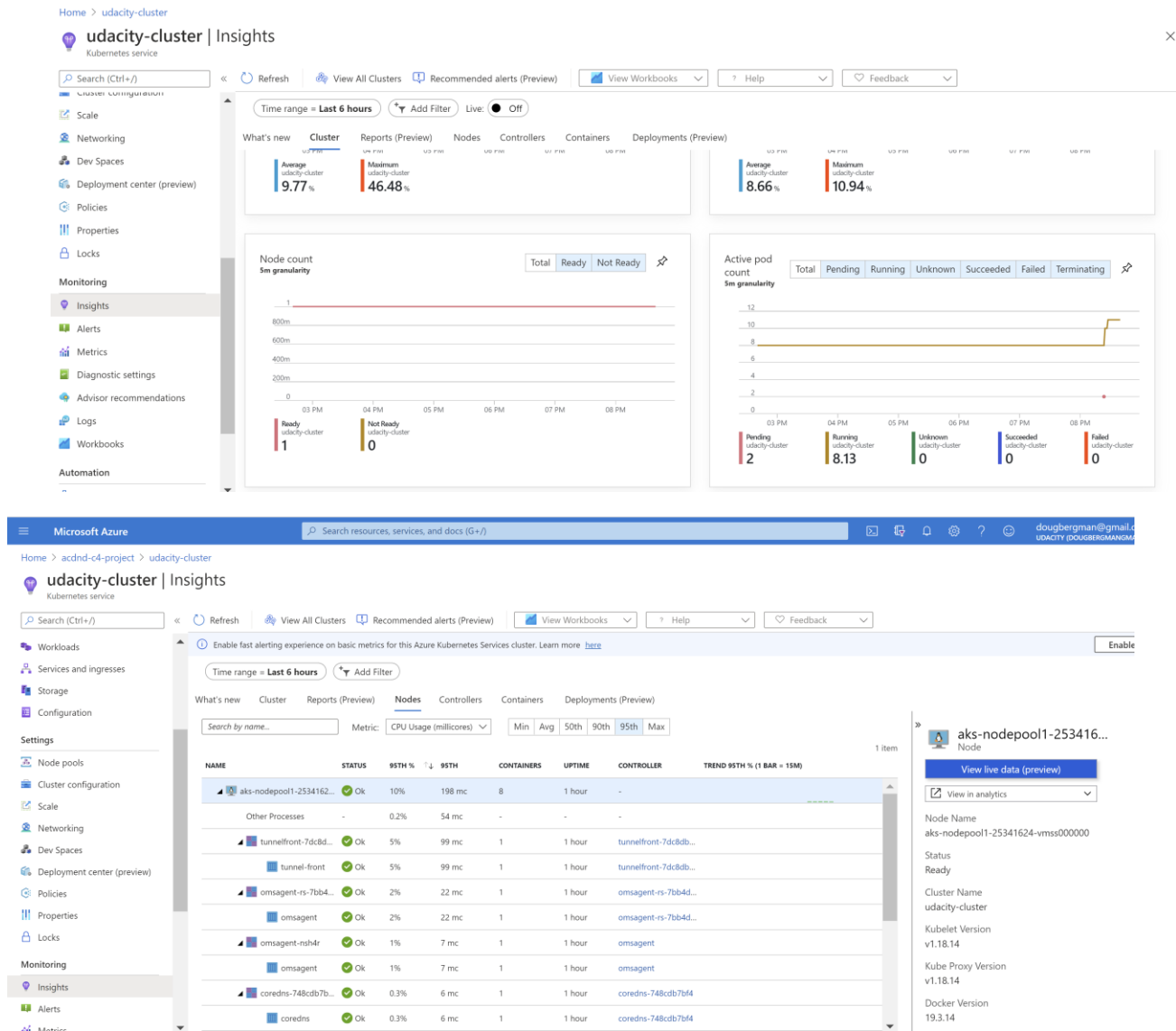
Virtual network/subnet : aks-vnet-25341624/aks-subnet

Properties Monitoring Capabilities (6) Recommendations Tutorials

Show data for last: 1 hour 6 hours 12 hours 1 day 7 days 30 days



3 As evidence, provide a screenshot showing Application Insights is enabled on the AKS cluster.



Containers

udacity-cluster | Insights

Search (Ctrl+ /)

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Security

Kubernetes resources

- Namespaces
- Workloads
- Services and ingresses
- Storage
- Configuration

Settings

- Node pools
- Cluster configuration
- Scale
- Networking

Refresh

View All Clusters

Recommended alerts (Preview)

View Workbooks

Help

Feedback

Enable fast alerting experience on basic metrics for this Azure Kubernetes Services cluster. Learn more [here](#)

Time range = Last 6 hours

Add Filter

What's new Cluster Reports (Preview) Nodes Controllers Containers Deployments (Preview)

Search by name...

Metric: CPU Usage (millicores)

Min Avg 50th 90th 95th Max

8 items

NAME	STATUS	95TH %	95TH	POD	NODE	RESTARTS	UPTIME	TREND 95TH % (1 BAR = 15M)
tunnel-front	Ok	5%	99 mc	tunnelfront-7dc8...	aks-nodepool1-2...	0	1 hour	
omsagent	Ok	2%	22 mc	omsagent-rs-7bb...	aks-nodepool1-2...	0	1 hour	
omsagent	Ok	1%	7 mc	omsagent-nsh4r	aks-nodepool1-2...	0	1 hour	
coredns	Ok	0.3%	6 mc	coredns-748cdb7...	aks-nodepool1-2...	0	1 hour	
coredns	Ok	0.3%	5 mc	coredns-748cdb7...	aks-nodepool1-2...	0	1 hour	
metrics-server	Ok	0.1%	3 mc	metrics-server-58...	aks-nodepool1-2...	0	1 hour	
kube-proxy	Ok	0%	0.8 mc	kube-proxy-cnft...	aks-nodepool1-2...	0	1 hour	
autoscaler	Ok	0%	0.4 mc	coredns-autoscal...	aks-nodepool1-2...	0	1 hour	

4. Create an alert

As evidence, provide a screenshot of the Azure Alert and email sent when the alert is triggered.

[Home](#) > [udacity-cluster](#) >

Create alert rule

Rules management

[Edit resource](#)

Condition

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

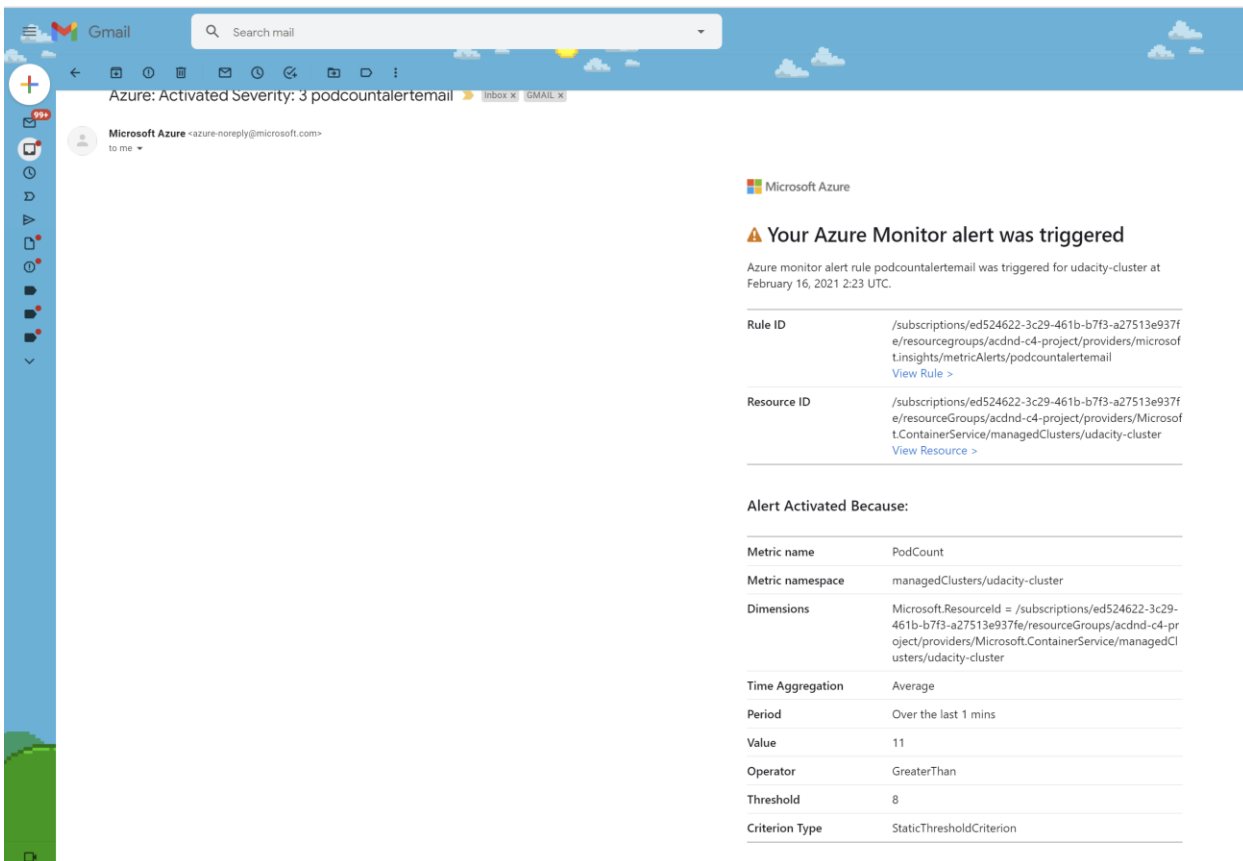
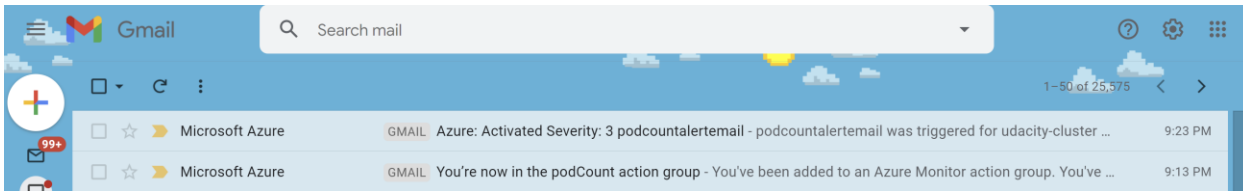
Condition name	Time series monitored ⓘ	Estimated monthly cost (USD) ⓘ
✓ Whenever the average podcount is greater than 8	1	\$ 0.10
Add condition	1	Total \$ 0.10

Actions

Send notifications or invoke actions when the alert rule triggers, by selecting or creating a new action group. [Learn more](#)

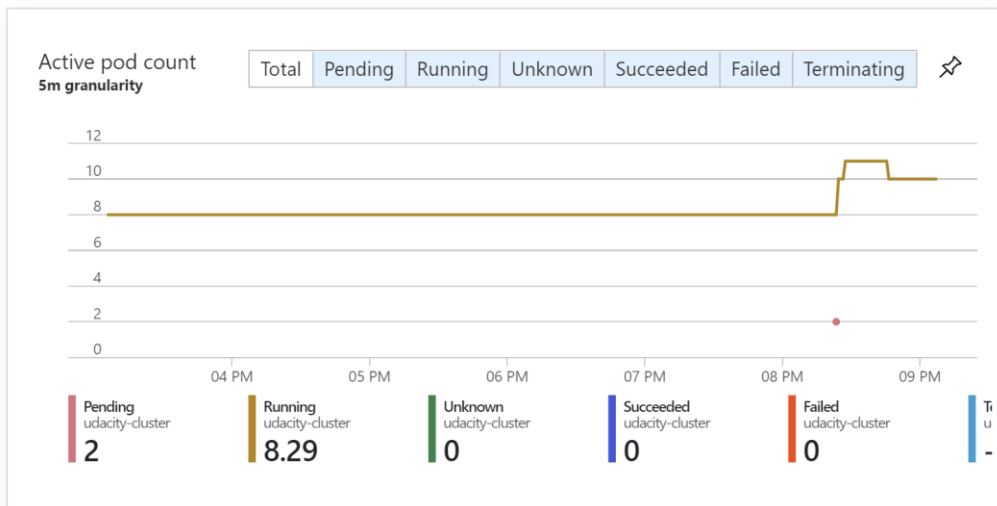
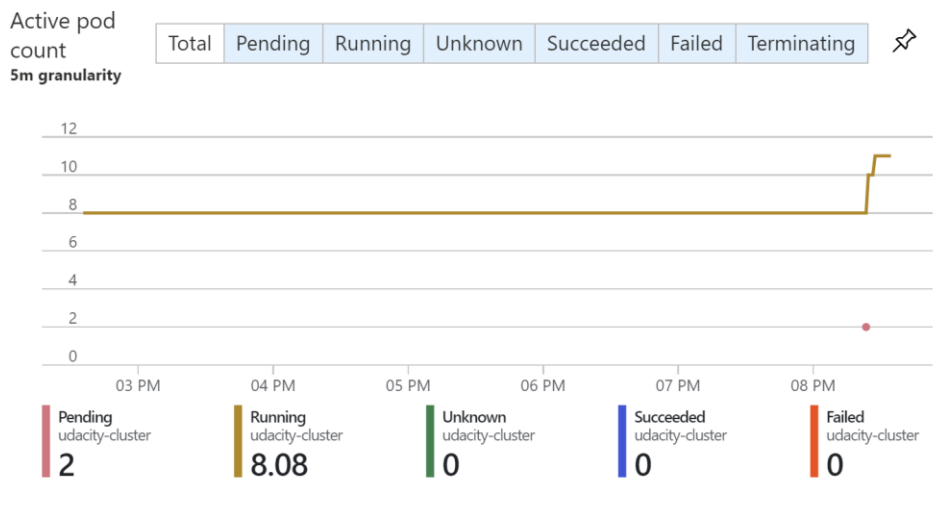
Action group name	Contains actions
podCount	1 Email ⓘ

[Manage action groups](#)



5. Create a horizontal pod auto scaler and cause load on the container.

- The output of the Horizontal Pod Autoscaler, showing an increase in the number of pods.
- The Application Insights metrics which show the increase in the number of pods.



- The email you received from the alert when the pod count increased.



Azure: Activated Severity: 3 NODECOUNTGT2  Inbox x EMAIL x



Microsoft Azure <azure-noreply@microsoft.com>
to me ▾

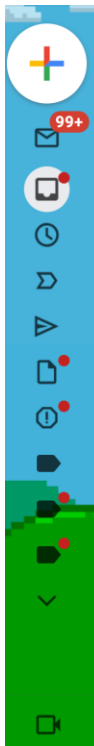
4:58 PM (4



Your Azure Monitor alert was triggered

Azure monitor alert rule NODECOUNTGT2 was triggered for udacity-cluster at February 16, 2021 21:58 UTC.

Alert rule description	node count > 2
Rule ID	/subscriptions/ed524622-3c29-461b-b7f3-a27513e937fe/resourcegroups/acdnd-c4-project/providers/microsoft.insights/metricAlerts/NODECOUNTGT2



Azure: Deactivated Severity: 3 NODECOUNTGT2  Inbox x EMAIL x



Microsoft Azure <azure-noreply@microsoft.com>
to me ▾

4:54 PM



Your Azure Monitor alert was resolved

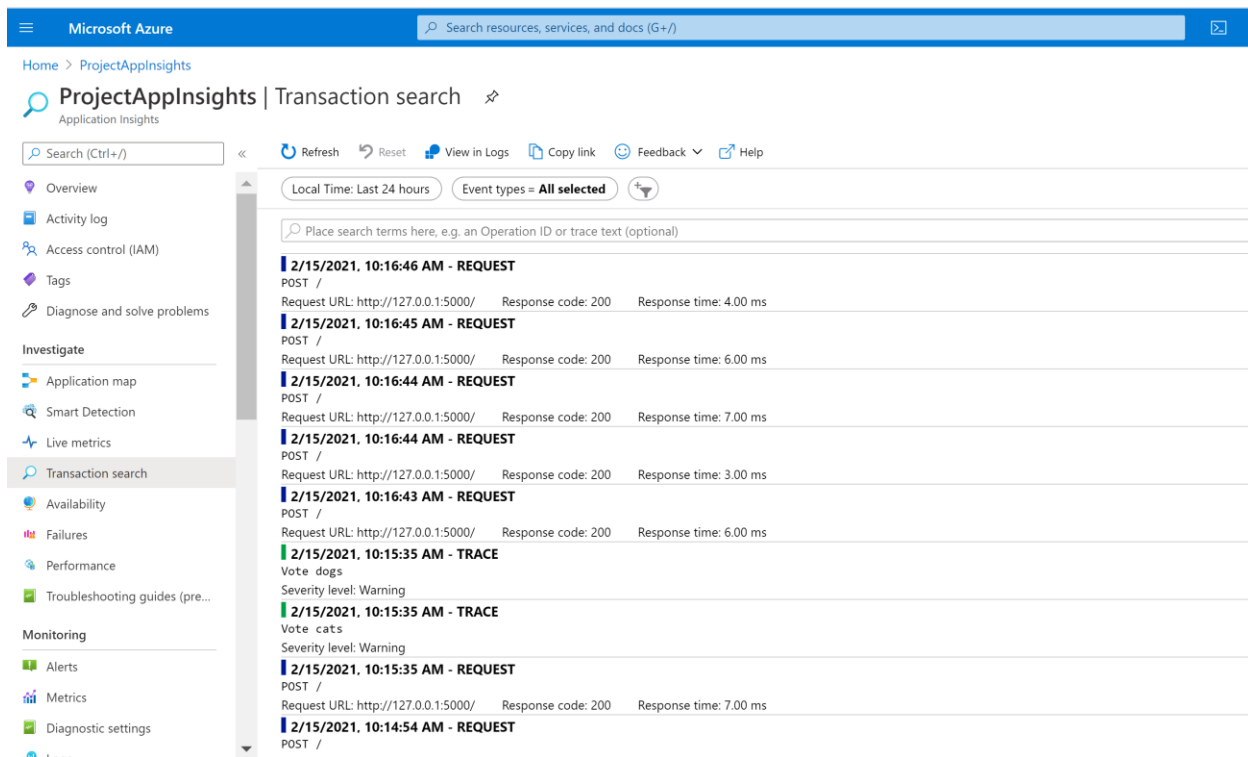
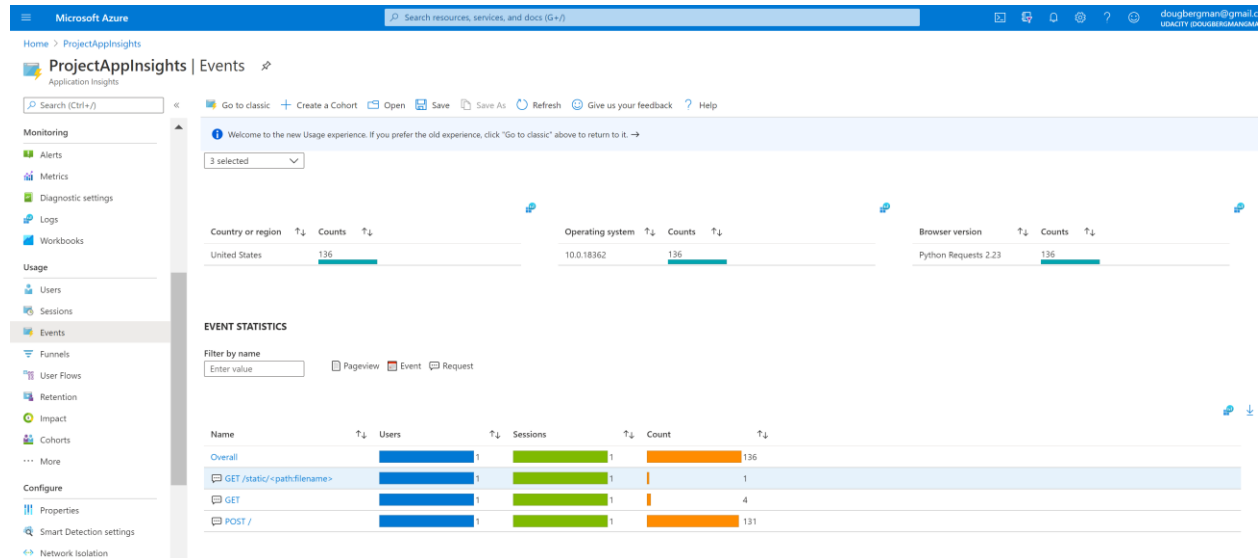
Azure monitor alert rule NODECOUNTGT2 was resolved for udacity-cluster at February 16, 2021 21:53 UTC.

Alert rule description	node count > 2
Rule ID	/subscriptions/ed524622-3c29-461b-b7f3-a27513e937fe/resourcegroups/acdnd-c4-project/providers/microsoft.insights/metricAlerts/NODECOUNTGT2 View Rule >

6, Import and reference the correct libraries to enable the collection of Application Insights telemetry data.

- Application Insight Events that show the results of clicking **vote** for each **Dogs & Cats**

(Doug not sure if this is the right screenshot)



Azure Voting App

Cats

Dogs

Reset

Cats - 3 | Dogs - 3

- The output of the **traces** query in Azure Log Analytics

Microsoft Azure

Home > ProjectAppInsights

ProjectAppInsights | Logs

Search (Ctrl+V)

Access control (IAM)

Tags

Diagnose and solve problems

Investigate

Application map

Smart Detection

Live metrics

Transaction search

Availability

Failures

Performance

Troubleshooting guides (pre-...)

Monitoring

Alerts

Metrics

Diagnostic settings

New Query 1*

ProjectAppInsights Select scope Run Time range: Last 24 hours Save Copy link New alert rule Export Pin to dashboard Format query

Tables Queries Filter

Search

Filter Group by: Solution

Collapse all

Favorites

You can add favorites by clicking on the icon

Application Insights

availabilityResults

browserTimings

customEvents

customMetrics

dependencies

exceptions

pageViews

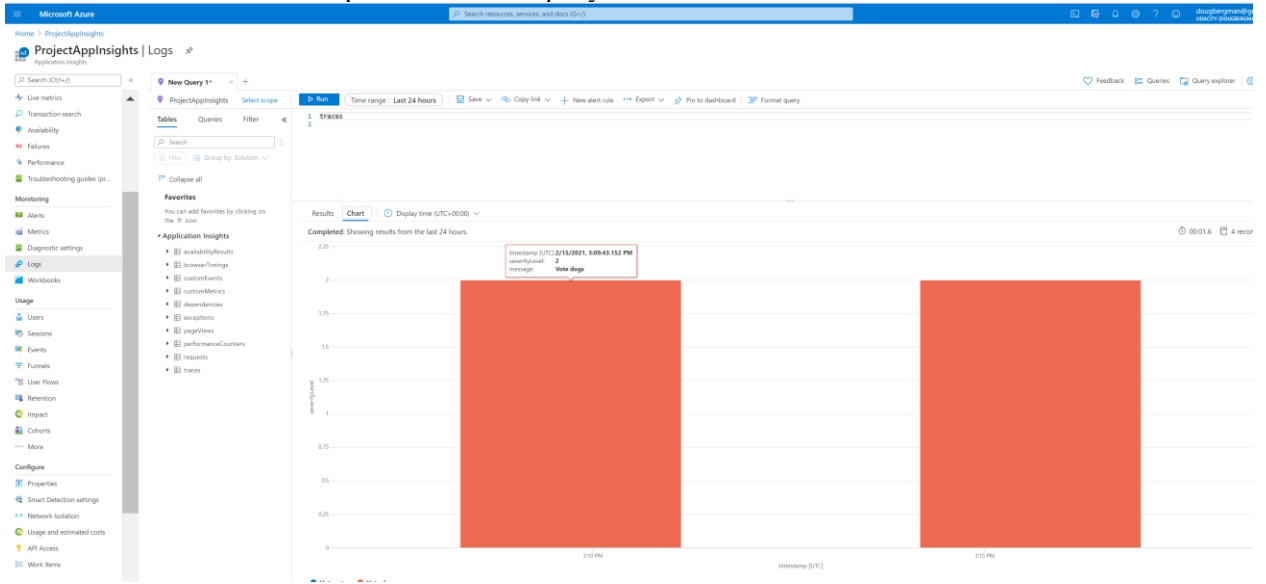
performanceCounters

Results Chart Columns Display time (UTC+00:00) Group columns

Completed. Showing results from the last 24 hours. 00:00.3 4 records

timestamp [UTC]	message	severityLevel	itemType	customDimensions	operationId
2/15/2021, 3:15:35.376 PM	Vote cats	2	trace	{"process":"MainProcess","module":"main","fileName":"C:\\Users\\D..."	000000000000000000000000
2/15/2021, 3:15:35.377 PM	Vote dogs	2	trace	{"process":"MainProcess","module":"main","fileName":"C:\\Users\\D..."	000000000000000000000000
2/15/2021, 3:09:43.150 PM	Vote cats	2	trace	{"lineNumber":"112","fileName":"C:\\Users\\Douglas Bergman\\nd08...	000000000000000000000000
2/15/2021, 3:09:43.152 PM	Vote dogs	2	trace	{"lineNumber":"117","fileName":"C:\\Users\\Douglas Bergman\\nd08...	000000000000000000000000

- The chart created from the output of the **traces** query



7. Create an auto scaling rule for a VM Scale Set.

Evidence of conditions of rule

Default* Auto created scale condition

Scale mode

☒ Scale based on a metric ☐ Scale to a specific instance count

Rules

It is recommended to have at least one scale in rule. To create new rules, click [Add a rule](#).

Scale out

When udacity-vmss (Average) Disk Read Bytes > 200 Increase count by 1

[+ Add a rule](#)

Instance limits

Minimum ⓘ
1 ✓

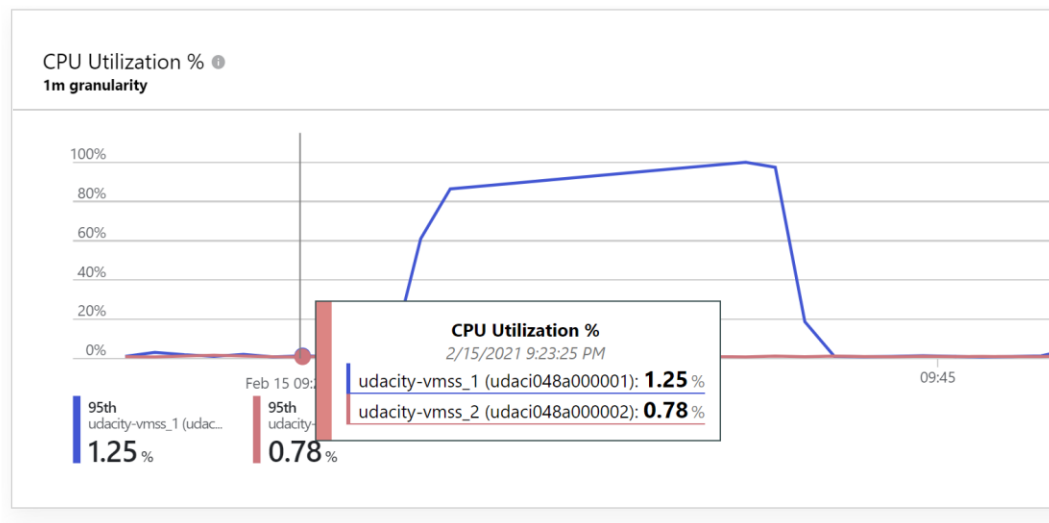
Maximum ⓘ
2 ✓

Default ⓘ
1 ✓

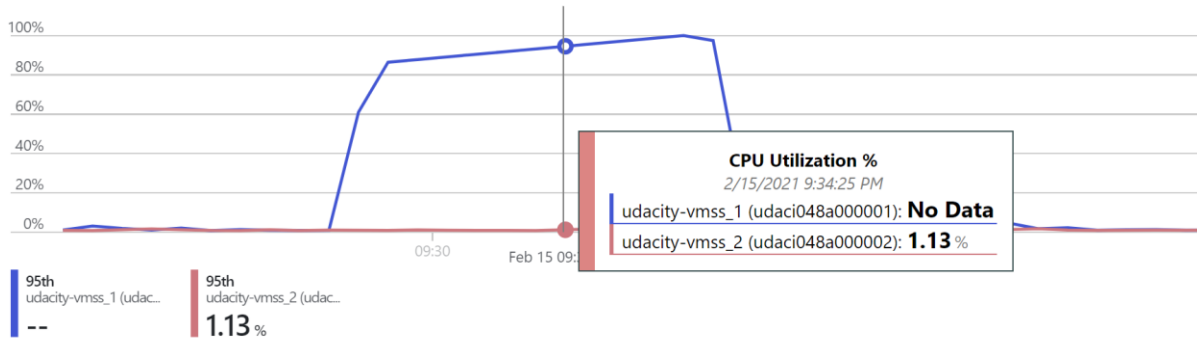
Schedule

This scale condition is executed when none of the other scale condition(s) match

- The Activity log of the VM scale set that shows it scaled up, including a timestamp.
- The new instances being created.
- The metrics showing the load increasing, then decreasing once scaled up, including a timestamp.



CPU Utilization %
1m granularity



CPU Utilization %
1m granularity



Gmail interface showing a list of emails from Microsoft Azure. The list includes details about Azure Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was triggered for udacity-cluster at F... and Azure: Deactivated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was resolved for udacity-cluster at...

From	Subject	Time
Microsoft Azure	Azure: Activated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was triggered for udacity-cluster at F...	4:58 PM
Microsoft Azure	Azure: Deactivated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was resolved for udacity-cluster at...	4:54 PM
Microsoft Azure	Azure: Activated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was triggered for udacity-cluster at F...	4:38 PM
Microsoft Azure	Azure: Deactivated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was resolved for udacity-cluster at...	4:37 PM
Microsoft Azure	Azure: Activated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was triggered for udacity-cluster at F...	3:52 PM
Microsoft Azure	Azure: Deactivated Severity: 3 NODECOUNTGT2 - NODECOUNTGT2 was resolved for udacity...	

8. RunBook

Create an Azure RunBook to be executed by an Azure Automation Account.

As evidence, provide a screenshot of your resource group containing your running resources.

Home > acdnd-c4-project >

ProjectRunBook (PrjAuoAcct/ProjectRunBook)

Runbook

Search (Ctrl+/) << ▶ Start </> View Edit ⌚ Link to schedule 📄 Add webhook 🗑 Delete 📤 Export 🔄 Refresh

Overview

Activity log

Tags

Diagnose and solve problems

Resources

Jobs

Schedules

Essentials

Resource gro... : [acdnd-c4-project](#)

Account : PrjAuoAcct

Location : East US

Subscription : [Azure subscription 1](#)

Tags (change) : [Click here to add tags](#)

Subscription ... : [ed524622-3c29-461b-b7f3-a27513e937fe](#)

Status : New

Runbook type : Python 3 Runbook (preview)

Last modified : 2/15/2021, 10:59 PM

Recent Jobs

Configure an Azure Alert to trigger the RunBook to execute.

As evidence, provide a screenshot of the configuration.

Home > PrjAuoAcct

PrjAuoAcct | Runbooks

Automation Account

Search (Ctrl+/) << + Create a runbook ⬇ Import a runbook 📖 Browse gallery 📄 Learn more 🔄 Refresh

Search runbooks...

Name	Authoring status	Runbook type	Last modified
ProjectRunBook	New	Python 3 Runbook (preview)	2/15/2021, 10:59 PM
StopAzureV2Vm	Published	Graphical Runbook	2/16/2021, 9:35 PM
VMSTOPALERT	In edit	PowerShell Runbook	2/16/2021, 9:30 PM

Home > PrjAuoAcct >

All Alerts

+ New alert rule ⚙ Edit columns ⚙ Manage alert rules 🔔 View classic alerts 🔄 Refresh | ✓ Change state ❤ Feedback

Don't see a subscription? [Open Directory](#) + [Subscription settings](#)

Subscription : **Azure subscription 1** Resource group : **acdnd-c4-project** Resource type : **11 selected** Resource : **prjauoacct** Time range : **Past 24 hours** Monitor condition : **2 selected** Monitor service : **24 selected**

Alert state : **3 selected** Severity : **Sev 3**

All alerts Alerts by smart group (preview)

Search by name (case-insensitive)

Name ↑↓	Severity ↑↓	Monitor condition ↑↓	Alert state ↑↓	Affected resource ↑↓	Monitor service ↑↓	Signal type ↑↓	Fired time ↑↓	Subscription ↑↓
<input type="checkbox"/> alertVMSOPC499	Sev3	Fired	New	prjauoacct	Platform	Metric	2/16/2021, 9:13 PM	Azure subscription 1

9. Configure an Azure Alert to trigger the RunBook to execute.

alertVMSOPC499

Alert Name

Severity

Sev3

Fired time

2/16/2021, 9:13 PM

Affected resource

prjauoacct

Hierarchy

Azure subscri... > acdnd-c4-...

State

New

Monitor condition

Fired

Change alert state

Why did this alert fire?

Total Jobs (Sum)

prjauoacct

3

Evaluation window start time (for which alert fired)

2/16/2021, 9:05 PM

Evaluation window end time (for which alert fired)

2/16/2021, 9:10 PM

Criterion

Metric name

TotalJob

Metric namespace

Microsoft.Automation/automationAccounts

Time aggregation

Total

Operator

LessThan

Threshold

1

Metric value (when alert fired)

0

Dimension name

ResourceId

Dimension value

/subscriptions/ed524622-3c29-461b-b7f3-a27513e937fe/r...

Description

alertVMSOPC499

Target resource type

microsoft.automation/automationaccounts

Monitor service

Platform

Signal type

Metric

Alert ID

f488e6dc-eb9f-4f62-994b-577345d166a6

Alert rule

alertVMSOPC499

Suppression status

None

10. Cause the RunBook to be automatically triggered and resolve a problem

- Email showing the alert was triggered
- Metrics or other evidence showing the RunBook executed and resolved the issue.

Rule enabled

Home > PrjAuoAcct >

Rules

Rules management

+ New alert rule Edit columns Manage actions View classic alerts Refresh Enable Disable Delete

Don't see a subscription? [Open Directory](#) + [Subscription settings](#)

Subscription: **Azure subscription 1** Resource group: **acdnd-c4-project** Resource type: **6 selected** Signal type: **All signal types** Status: **Enabled** Resource: **PrjAuoAcct**

Displaying 1 - 1 rules out of total 1 rules

Search alert rules based on rule name and condition...

Name	Condition	Status	Target resource	Target resource type	Signal type
<input type="checkbox"/> alertVMSOPC499	Whenever the count of totaljob is less than ...	Enabled	PrjAuoAcct	Automation Accounts	Metrics

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

Home > VMSTOPALERT (PrjAuoAcct/VMSTOPALERT)

VMSTOPALERT (PrjAuoAcct/VMSTOPALERT) | Jobs

Runbook

Search (Ctrl+/) Refresh Find job

Overview

Activity log

Tags

Diagnose and solve problems

Resources

Jobs

Schedules

Webhooks

Status	Created	Last updated
✓ Completed	2/16/2021, 9:29:49 PM	2/16/2021, 9:29:57 PM

