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Lab: Module 7 - Monitoring and Troubleshooting Containers

Duration: 30 minutes

Exercise 1: Monitor an Azure Managed Kubernetes Service (AKS) cluster with Microsoft Operations Management Suite (OMS)

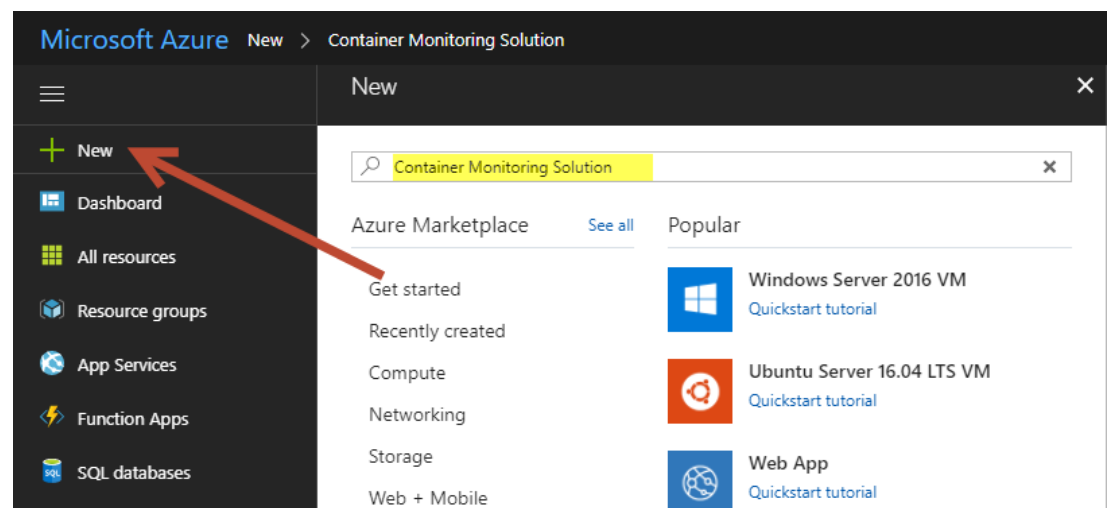
In this exercise, you will deploy Microsoft Operations Management (OMS) agents to centrally monitor the performance of your containers in your Linux Kubernetes cluster.

OMS is Microsoft's cloud-based IT management solution that helps you manage and protect your on-premises and cloud infrastructure. Container Solution is a solution in OMS Log Analytics, which helps you view the container inventory, performance, and logs in a single location. You can audit, troubleshoot containers by viewing the logs in centralized location, and find noisy consuming excess container on a host.

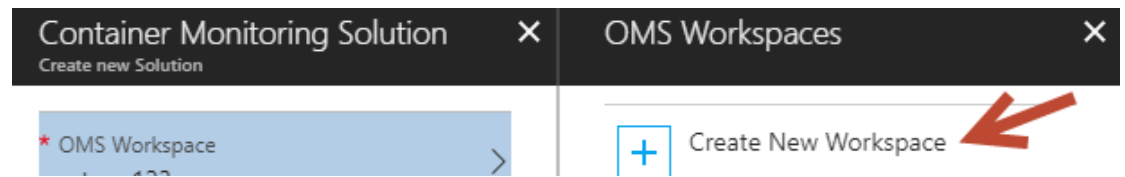
Tasks

1. Create OMS Workspace in the Azure Portal

1. Click + New. Search for Container Monitoring Solution



2. Select **Container Monitoring Solution**
3. Click Create
4. Select Log Analytics Workspace > Create a New Workspace



5. Fill in the boxes with any unique name for the OMS workspace and resource group you would like. Keep the pricing tier unchanged. Depending on your subscription, you might or might not see the free pricing tier.

OMS Workspace

Create new or link existing one created in OMS Portal

☒ Create New

☐ Link Existing

* OMS Workspace

* Subscription

Azure Pass

* Resource group

☒ Create new

☐ Use existing

* Location

Australia Southeast

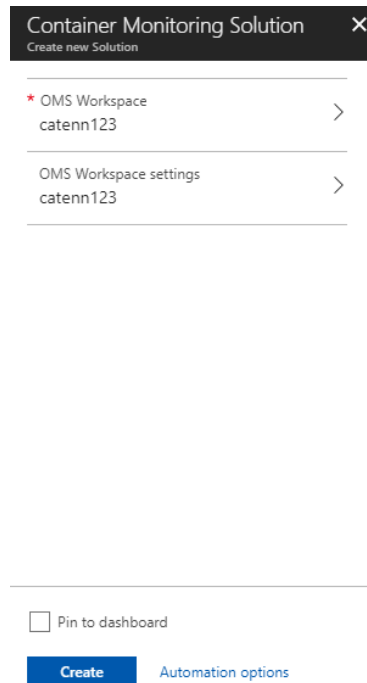
* Pricing tier

Free

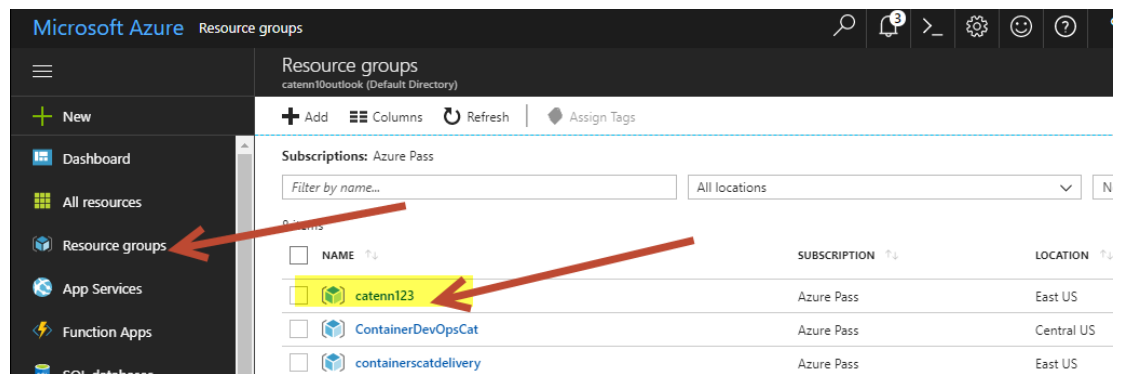
☐ Pin to dashboard

OK

6. Hit OK.
7. Once you've chosen a workspace and the workspace settings, hit Create.



8. Wait a minute for it to deploy.
9. Click Resource Groups and click on your new OMS resource group.



10. You should see two resources: Solution and Log Analytics:

catenn123
Resource group

Search (Ctrl+/,)

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Quickstart

Resource costs

Deployments

+ Add Columns Delete resource group Refresh Move Assign Tags

Subscription (change)
Azure Pass
Subscription ID
291d0042-8d03-407c-adbd-1dafc6eafb68

Deployments
2 Succeeded

Filter by name... All types All locations No group

2 items

<input type="checkbox"/>	NAME ↑↓	TYPE ↑↓	LOCATION ↑↓
<input type="checkbox"/>	catenn123	Log Analytics	East US
<input type="checkbox"/>	Containers(catenn123)	Solution	East US

11. Click on the Log Analytics resource.

12. Click Advanced Settings:

groups > catenn123 > catenn123

Search resources, services and docs

catenn123
Log Analytics

Search (Ctrl+/,)

OMS Workspace

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

SETTINGS

Locks

Automation script

Advanced settings

OMS Portal Delete Upgrade Summary Log

Essentials

Resource group (change)
catenn123
Status
Active
Location
East US
Subscription name (change)
Azure Pass
Subscription ID
291d0042-8d03-407c-adbd-1dafc6eafb68

Work:
cater
Work:
dfe2.
Pricin
Free
Mana
Open

Management

Overview Log Search OMS Portal

13. Choose Connected Sources > Linux Servers > then you should see a Workspace ID and Primary key. Copy both of these into Notepad.

Advanced settings
catenn123

Connected Sources >

Data >

Computer Groups >

Windows Servers >

Linux Servers >

Azure Storage >

System Center >

Linux Servers
Attach any Linux server or client.

0 LINUX COMPUTERS CONNECTED

[Download Agent for Linux](#)

You'll need the Workspace ID and Key to install the agent.

WORKSPACE ID
dfe2afad-2288-41ae-a6ba-dad9b597f9b9

PRIMARY KEY
pKLnbrKwNnV1NsDZetRyeGV74cSUG2KLrtf [Regenerate](#)

SECONDARY KEY
HKYZM+LdZ6TYOQeVt6M4IkUuXwrX2tXuS [Regenerate](#)

DOWNLOAD AND ONBOARD AGENT FOR LINUX
wget https://raw.githubusercontent.com/Microsoft/OMS-Agent-for-

14. Open the **omsagent.yaml** file in **Assets** folder and replace **<WSID>** and **<KEY>** parameters with WORKSPACE ID and PRIMARY KEY values you have copied in the previous step, do not add quotes to these, just copy and paste directly as shown below:

```
containers:
- name: omsagent
  image: "microsoft/oms"
  imagePullPolicy: Always
  env:
  - name: WSID
    value: 315db342-45fd-4ef3-8716-cf3a5a9d0c35
  - name: KEY
    value: s50irOXfWAZ1ma+c1QtpWWzv+TQ/VRnSZyeroPStdmfX2KrLjadf
  securityContext:
    privileged: true
  ports:
```

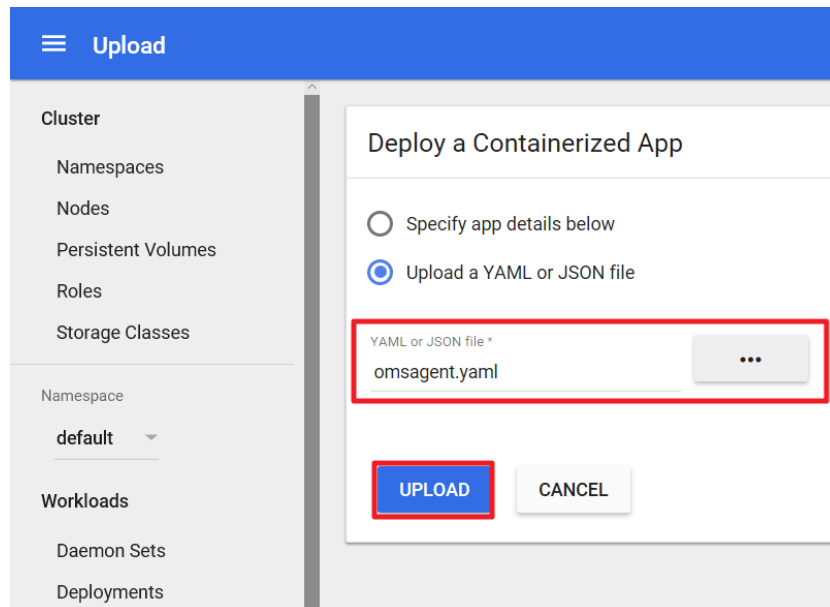
15. Now run the following command in PowerShell console to open your Linux Kubernetes cluster dashboard.

```
az aks browse -n=AKS-CLUSTER-NAME -g=RESOURCE-GROUP
```

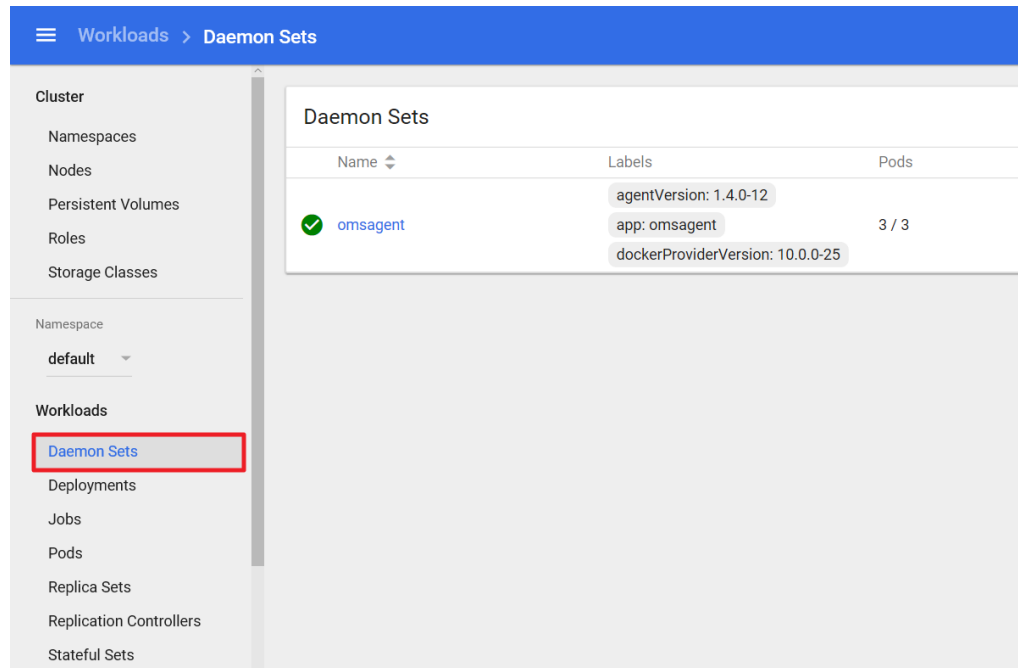
16. Go to the **Deployment** page and click **Create**.



17. Now upload the **omsagent.yaml** file to deploy OMS agents into your cluster as DaemonSets. DaemonSets are used by Kubernetes to run a single instance of a container on each host in the cluster. They're perfect for running monitoring agents.



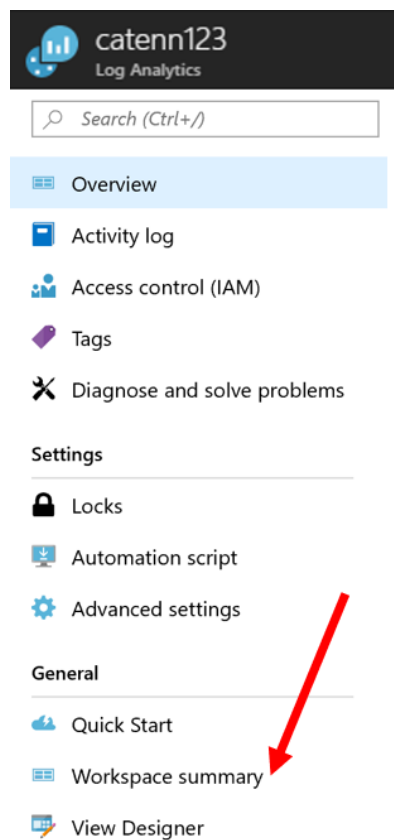
Check the progress of the deployment on **DaemonSets** page.



The screenshot shows the Kubernetes Dashboard interface. The top navigation bar is blue with a hamburger menu icon and the text 'Workloads > Daemon Sets'. The left sidebar is grey and contains a list of resources: Cluster, Namespaces, Nodes, Persistent Volumes, Roles, Storage Classes, Namespace (default), Workloads (Daemon Sets, Deployments, Jobs, Pods, Replica Sets, Replication Controllers, Stateful Sets), and Daemon Sets (highlighted with a red box). The main content area is titled 'Daemon Sets' and contains a table with the following data:

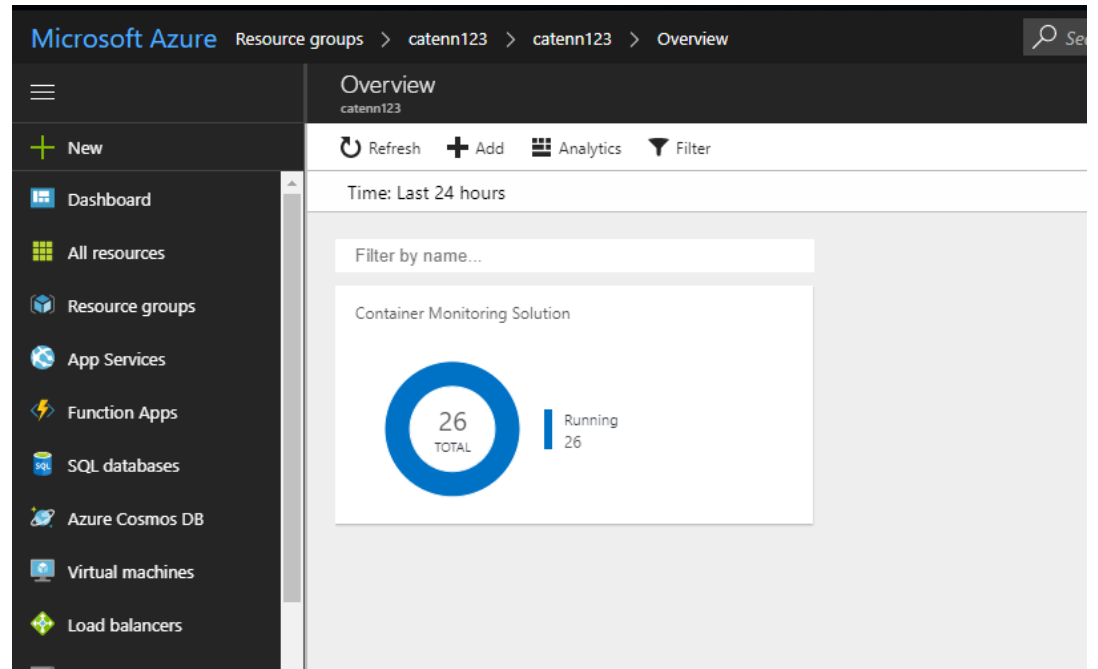
Name	Labels	Pods
omsagent	agentVersion: 1.4.0-12 app: omsagent dockerProviderVersion: 10.0.0-25	3 / 3

18. Go back to your Log Analytics resource and hit **Workspace summary**.

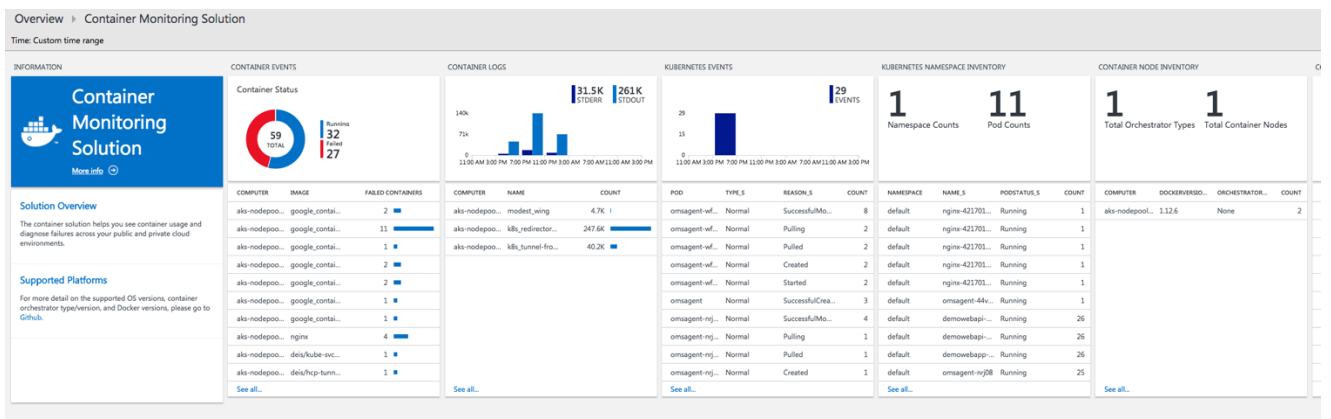


The screenshot shows the Azure Log Analytics workspace 'catenn123'. The left sidebar contains the following options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Locks, Automation script, Advanced settings), and General (Quick Start, Workspace summary, View Designer). A red arrow points to the 'Workspace summary' option in the General section.

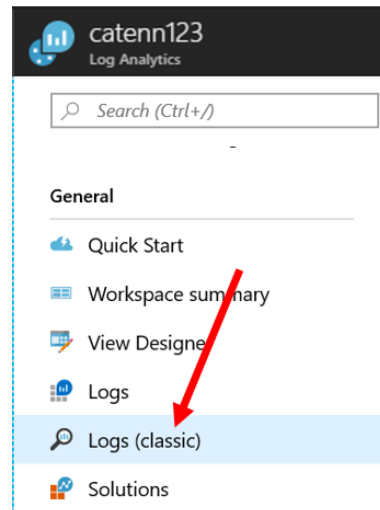
19. Although the OMS agent is up and running in your Kubernetes Dashboard it may take several minutes before the OMS dashboard will start displaying the metrics collected from the Kubernetes cluster. Wait ~10 minutes for this to show up and display something other than 0.



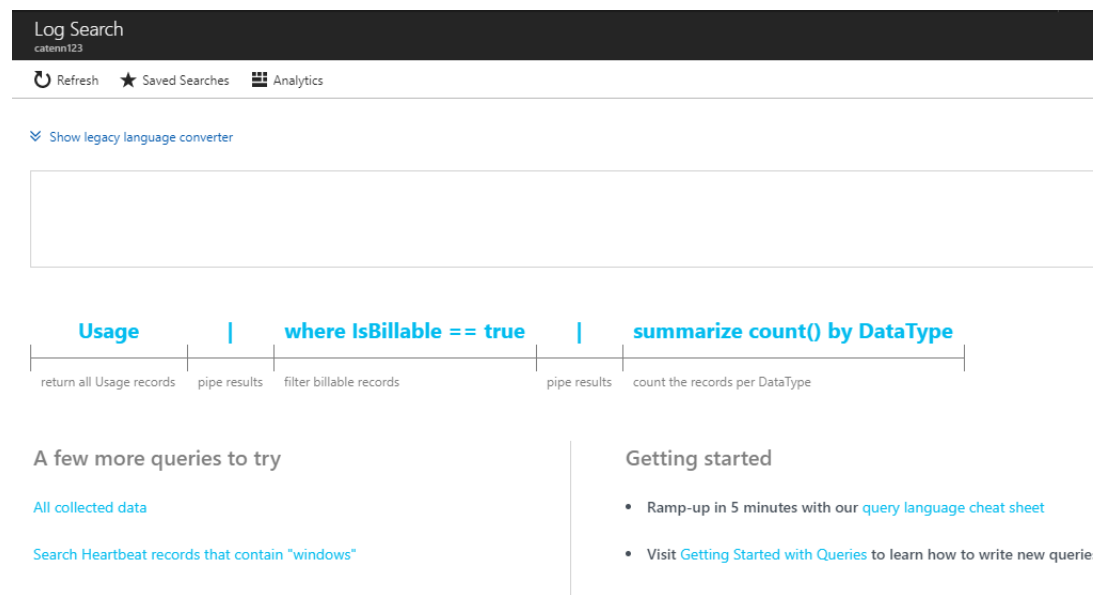
20. Click on the chart title **Container Monitoring Solution** and it will take you to the detail dashboard view. You will see charts about metrics like total running containers, total images, image type count, CPU and memory usage of the containers, and so on. *If you do not see the Container Monitoring Solution widget, you can skip this step and move on to the next step.



21. You can also perform Log search by querying the logs. Go back to your Log Analytics resource. Click **Log (Classic)**.



22. You will see a page like this:

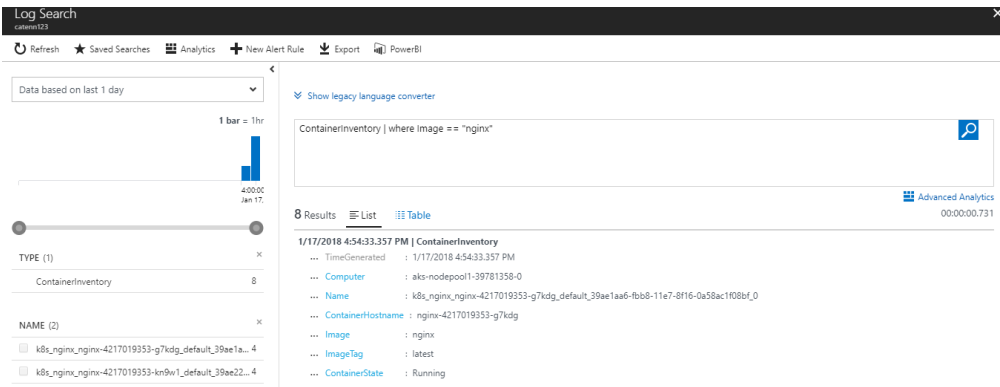


23. Log Search uses specific query language format. You will write a simple query for now but more details about the query language and its format are available at: <https://docs.loganalytics.io/docs/Language-Reference>

Also, more details about type of records collected related to containers is available at: <https://docs.microsoft.com/en-us/azure/log-analytics/log-analytics-containers>

24. Let's search the logs for the containers based on "nginx" container image (you can replace nginx with any other container image that you have used during deployment). In the search box type the following command and press the search button.

ContainerInventory | where Image == "nginx"



You can also filter based on other pieces of information available. For example: to find all the containers based on nginx that have failed you can use the query:

ContainerInventory | where Image == "nginx" and ContainerState == "Failed"

25. You can also view the performance any related logs. For example, to look at memory consumption on all nodes you can run following query:

Perf | where CounterName == "Memory Usage MB"

