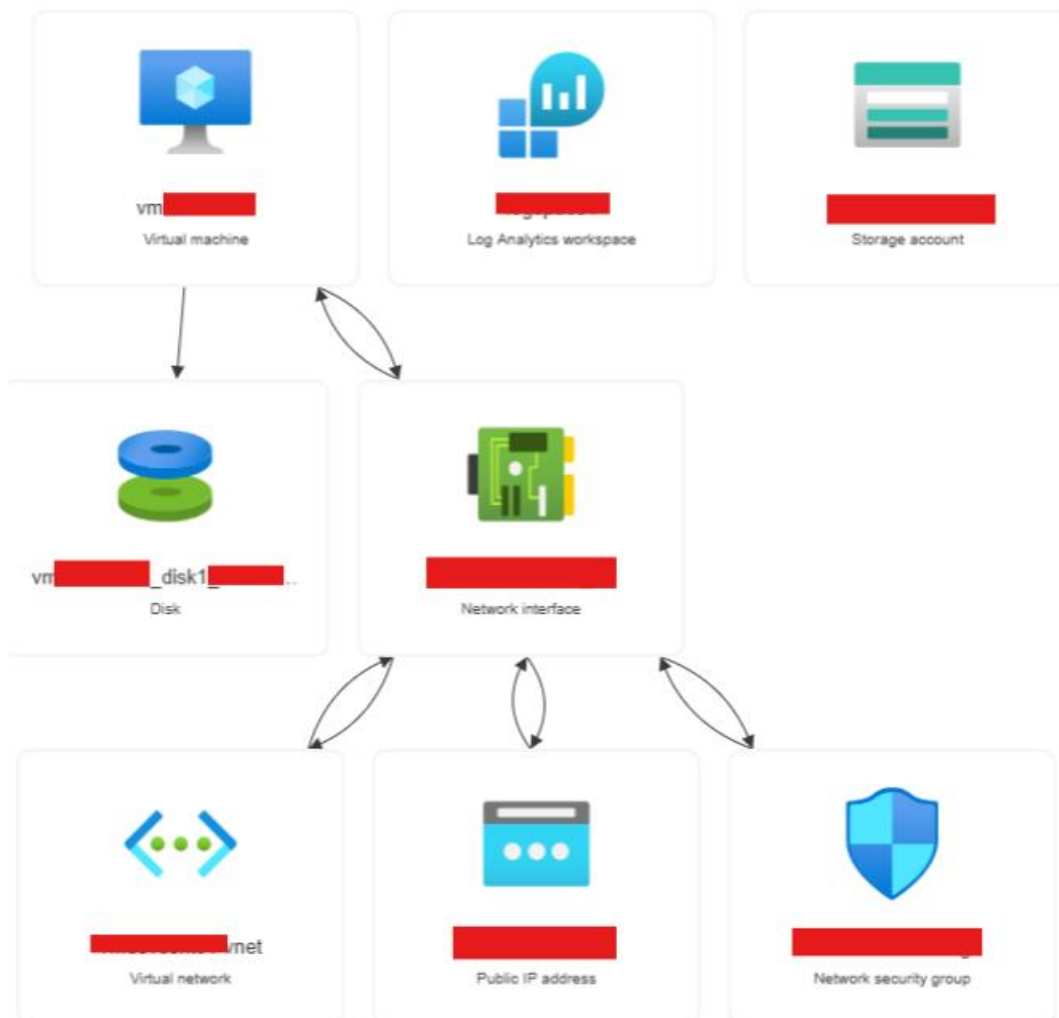# How to check Disk utilization (Logical Used %) for a Disk attached to an Azure Virtual Machine using Log Analytics

❖ Part 1: Understanding the Architecture

- Navigate to 'Resource group' and click 'Resource Visualizer' to retrieve the below diagram.

- Navigate to 'virtual network' and click on 'topology' to retrieve and understand the network topology configured.

❖ Part 2: Creating a Azure Virtual Machine (type Windows) in Azure Portal and retrieving details through Microsoft Visual Studio Code

• Step 1: Create a VM

Pre-req
- There should be an Azure account and active subscription

Implementation Steps

- Select 'Create a new VM'
- Create a new resource group or select existing one.
- Select image available in that region (here, type Windows and a suitable image was selected)
- Allow inbound port rules
- Select OS Disk.
- Select existing virtual network or create a new virtual network.
- Enable boot diagnostics and OS guest diagnostics

Kindly refer: Quickstart - Create a Windows VM in the Azure portal - Azure Virtual Machines | Microsoft Learn

• Step 2: Retrieve details of VM using PowerShell in Visual Studio Code on a Windows machine

Pre-req

- Install Visual Studio Code
- Install the PowerShell extension
- Update the PowerShell Module (if required)

Implementation Steps

- Login to Visual Studio Code
- Check PowerShell version

```
PS C:\Users\rohit> $PSVersionTable.PSVersion

Major  Minor  Patch  PreReleaseLabel BuildLabel
-----  -----  -----  --------------- ----------
7      4      2
```

- Install Az Module
  Install-Module -Name Az -AllowClobber -Repository PSGallery -Force

- Update Az Module
  Install-Module -Name Az -AllowClobber -Repository PSGallery -Force

- Check the installed version of Az module

```
PS C:\Users\rohit> Get-InstalledModule -Name Az -AllVersions | Select-Object -Property Name,Version

Name Version
---- -------
Az   12.0.0
```

- Connect to Azure Account

```
PS C:\Users\rohit> Connect-AzAccount
Please select the account you want to login with.
```

Please select the account to authenticate and login to the Azure account

- Check the details of Azure subscription
  Get-AzSubscription

- Check if the VM is created

```
PS C:\Users\rohit> Get-AzVm -ResourceGroupName RG_DEV_CENT01

ResourceGroupName      Name        Location      VmSize         OsType   NIC  ProvisioningState  Zone
-----------------      ----        --------      ------         ------        ---------------    ----
RG_DEV_CENT01    vmdevcent01 centralindia Standard_DS1_v2 Windows                    Succeeded     1
```

▪ Get details of Azure VM

```
PS C:\Users\rohit> Get-AzVm -ResourceGroupName RG_DEV_CENT01 vmdevcent01


ResourceGroupName   :
Id                  : /subscriptions/                                resourceGroups/        providers/Microsoft.Compute/virtualMachines/vmdevcent01
VmId                :
Name                : vmdevcent01
Type                : Microsoft.Compute/virtualMachines
Location            : centralindia
Tags                : {}
DiagnosticsProfile  : {BootDiagnostics}
Extensions          : {AzureMonitorWindowsAgent, AzurePerformanceDiagnostics, HealthExtension, Microsoft.Insights.VMDiagnosticsSettings}
HardwareProfile     : {VmSize}
NetworkProfile      : {NetworkInterfaces}
SecurityProfile     : {UefiSettings, SecurityType}
OSProfile           : {ComputerName, AdminUsername, WindowsConfiguration, Secrets, AllowExtensionOperations, RequireGuestProvisionSignal}
ProvisioningState   : Succeeded
StorageProfile      : {ImageReference, OsDisk, DataDisks, DiskControllerType}
Identity            : {PrincipalId, TenantId, Type}
Zones               : {1}
AdditionalCapabilities : {HibernationEnabled}
TimeCreated         : 17-06-2024 12:05:52
```

● Step 3: Setup Log Analytics workspace in Azure Portal

Pre-req
▪ There should be an Azure account and active subscription

Implementation Steps

Kindly refer: Create Log Analytics workspaces - Azure Monitor | Microsoft Learn

● Step 4: Check the space utilization of a disk attached to a Azure VM through Log Analytics Workspace

Pre-req
▪ There should be an Azure account, active subscription, Azure Virtual Machine in running state, and a Log Analytics Workspace configured
▪ Diagnostic settings on the Azure VM in enabled and configured state

Implementation Steps

▪ Select the log analytics workspace, navigate to logs, select resource type from the drop down and type virtual machine in the search bar

Queries

Always show Queries ⓘ | Community Git repo ⧉ | Docu

Query packs: Select query packs

| Resource type ∨ | 🔍 virtual machine ✕ | ⁺▽ Add filter |

★ Favorites

All Queries

Azure Stack HCI

Recovery Services Va...

Virtual Machine Scal...

Virtual machines

Virtual Machine available memory
Chart the VM's available memory over time.

Run   Example query

Virtual Machine free disk space
Show the latest report of free disk space, per instance.

Run   Example query

Top 10 Virtual Machines by CPU utilizati...
Find top 10 VM by CPU utilization in the last 7 days.

Run   Example query

Shut down Virtual Machines
Virtual Machines successfully shut down in the last 10 minutes.

Run   Example query

- Click on run and view the Kusto Query Log (KQL) commands
- Clicking 3 dotted lines on query editor also allows to change the scope of queries.
- (optional) choose appropriate time range and limit
- Modify the KQL to below

New Query 1* ··· ✕ +

▷ Run | Time range : **Last 7 days** | Limit : **1000**

```
1  Perf
2  | where ObjectName == "LogicalDisk" or ObjectName == "Logical Disk"
3  | where CounterName == "% Free Space"
4  | project TimeGenerated, Used_Space_Percent=100 - CounterValue, Computer, _ResourceId
```

- Check the historical disk usage % of the Azure VM disk

```
1  Perf
2  | where ObjectName == "LogicalDisk" or ObjectName == "Logical Disk"
3  | where CounterName == "% Free Space"
4  | project TimeGenerated, Used_Space_Percent=100 - CounterValue, Computer, _ResourceId
```

Results   Chart

TimeGenerated [UTC] ↑↓	Used_Space_Percent	Computer	_ResourceId
> 6/19/2024, 5:32:43.327 AM	9.659595999999993	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:31:43.326 AM	9.659595999999993	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:30:43.312 AM	9.659595999999993	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:29:43.298 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:28:43.285 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:27:43.284 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:26:43.280 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:25:43.277 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01
> 6/19/2024, 5:24:43.267 AM	9.647934000000006	vmdevcent01	/resourcegroups/rg_dev_cent01/providers/microsoft.compute/virtualmachines/vmdevcent01

- Retrieve the details using required graphs by formatting the chart types. I used scatter chart to understand the trend line.

```
1  Perf
2  | where ObjectName == "LogicalDisk" or ObjectName == "Logical Disk"
3  | where CounterName == "% Free Space"
4  | project TimeGenerated, Used_Space_Percent=100 - CounterValue, Computer, _ResourceId
```


Resources Used

- Reference Links:
  Quickstart - Create a Windows VM in the Azure portal - Azure Virtual Machines | Microsoft Learn

  Create Log Analytics workspaces - Azure Monitor | Microsoft Learn

  Analyze usage in a Log Analytics workspace in Azure Monitor - Azure Monitor | Microsoft Learn

  https://learn.microsoft.com/en-us/powershell/azure/install-azps-windows?view=azps-12.0.0&tabs=powershell

  PowerShell editing with Visual Studio Code

  azure - free disk space overview using InsightsMetrics - Stack Overflow

- Scott Duffy's Udemy course for AZ 104