

Ensure your Azure VMs has monitoring diagnostics metrics enabled

Why should you ensure that all your VMs have their monitoring diagnostics metrics enabled?

This helps you to:

- monitor the health of your VMs
- know when your VMs are reaching their memory, disk, CPU upper limits
- detect usage trends and anomalies
- set alert rules based on lower or upper thresholds
- control your costs by sizing according to required usage
- get cost effective sizing optimization recommendations from Cloudyn

Let's say you want to monitor the CPU % and Memory % of your Azure VMs.

These correspond to: "[Host] Percentage CPU" and "Memory percentage" / "Mem. percent available".

It should be easy within the [Azure Portal](#) to:

- create a graph containing these metrics for any of your Virtual machines, or
- set Alert rules on these metrics

Unfortunately, it is common for some or all of these metrics not be unavailable due to incorrect configuration.

Try the following steps to determine the available metrics:

Under "Virtual machines", select a VM, click Monitoring "Metrics". You should see a checkbox list including the above metrics.

Under "Virtual machines (classic)", select a VM, clicking "Overview", select the default graph containing "CPU Percentage". Clicking "Edit" should the above metrics

If you have VMs where these metrics are not available to be chosen, then follow the steps below.

How are your VMs currently configured?

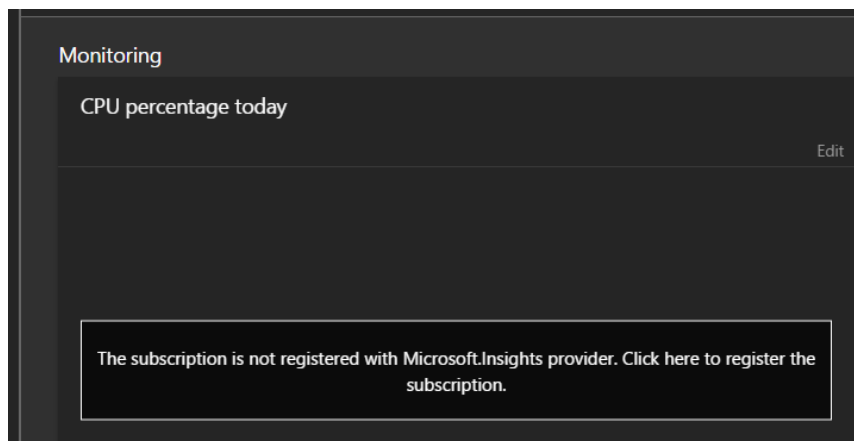
Enabling diagnostics metrics requires the following steps:

- Register "Microsoft.Insights" Resource provider on all subscriptions.
- For each VM, enable diagnostics settings, specify a storage account, and check "Basic metrics"

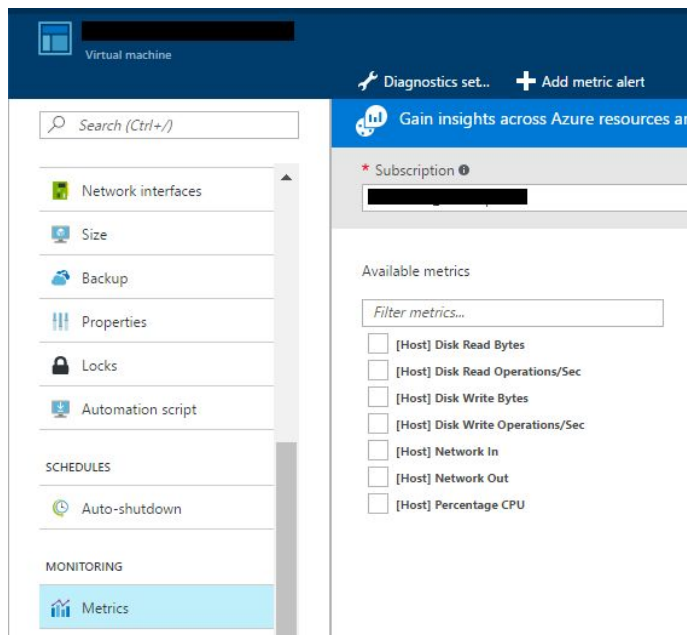
There are "Standard metrics" (ie Host metrics), eg "[Host] Percentage CPU".

There are "Basic metrics" (ie Extended metrics), eg "Memory percentage" / "Mem. percent available".

If "Microsoft.Insights" is not registered, then Standard metrics would not be available for Classic VMs (and in some cases, "Resource Manager" VMs), and Extended metrics would not be available for any VMs. This would result in an error such as:



If diagnostics settings is not configured for a VM (but "Microsoft.Insights is enabled" for classic VMs), then only Standard metrics would be available.



Extended metrics is only available if both "Microsoft.Insights" is registered, and diagnostics settings are configured

Virtual machine

Diagnostics set... + Add metric alert

Search (Ctrl+ /)

Gain insights across Azure resource

* Subscription

Available metrics

Filter metrics...

- ☐ [Host] Disk Read Bytes
- ☐ [Host] Disk Read Operations/Sec
- ☐ [Host] Disk Write Bytes
- ☐ [Host] Disk Write Operations/Sec
- ☐ [Host] Network In
- ☐ [Host] Network Out
- ☐ [Host] Percentage CPU
- ☐ CPU DPC time
- ☐ CPU IO wait time
- ☐ CPU idle time
- ☐ CPU interrupt time
- ☐ CPU nice time
- ☐ CPU percentage guest OS
- ☐ CPU privileged time
- ☐ CPU user time
- ☐ Disk queue length
- ☐ Disk read guest OS
- ☐ Disk read time
- ☐ Disk reads
- ☐ Disk total bytes
- ☐ Disk transfer time
- ☐ Disk transfers
- ☐ Disk write guest OS
- ☐ Disk write time
- ☐ Disk writes
- ☐ Mem. percent available

Automate enabling diagnostics on your VMs

To automate enabling diagnostics on your VM, you can use the utility available at <https://github.com/Cloudyn/azure-enable-diagnostics>

The utility addresses enabling diagnostics on one or many VMs (Classic or ARM), in one or many subscriptions, taking into account your storage account policy.

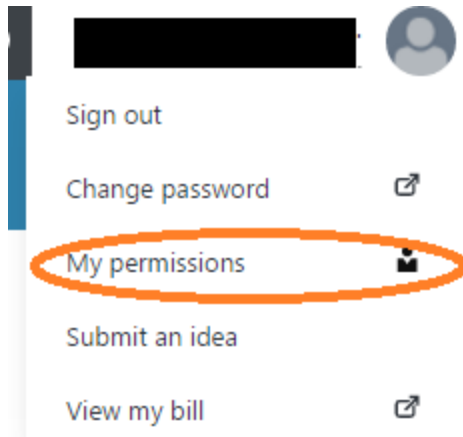
The utility automates performing steps similar to the manual steps described in the next section.

Manually enable diagnostics on your VMs

The following shows the manual steps for enabling diagnostic metrics.

Subscription Configuration

In the Azure Portal, click on the user icon at the top right. Select "My Permissions".

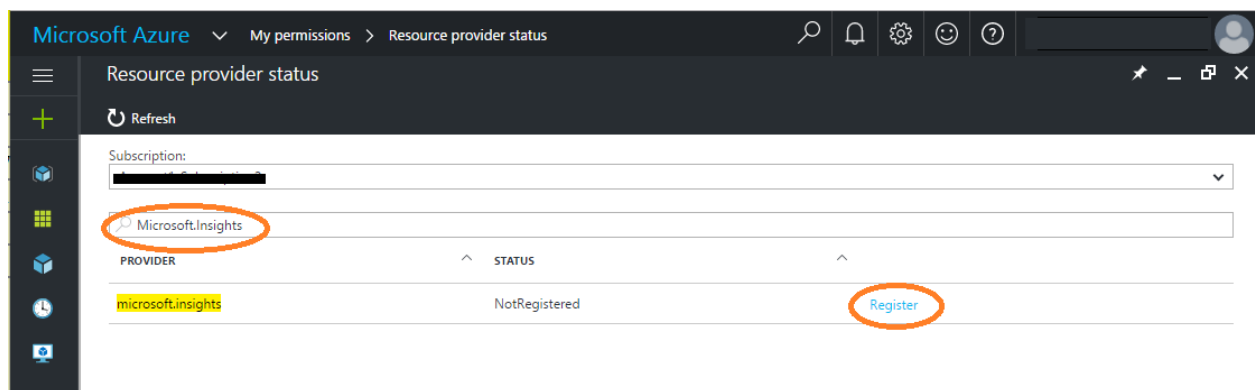


Select "Resource Provider Status".



For each Azure Subscription:

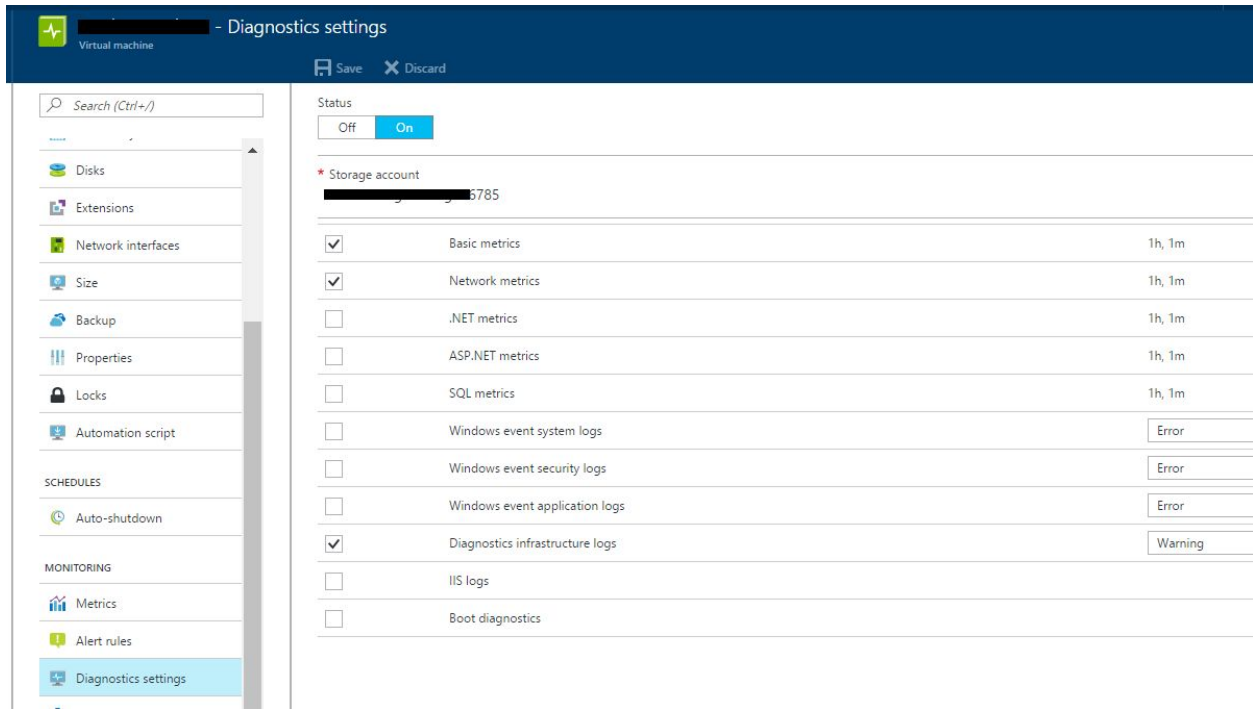
Search for "Microsoft.Insights". If it is not registered, then click "Register"



VM Configuration

Select "Virtual Machine" or "Virtual Machine (classic)". Select "Diagnostics settings" (or "Diagnostics"). Enable the Status, choose a Storage account, and select "Basic Metrics".

For Windows machines:



Virtual machine - Diagnostics settings

Save Discard

Search (Ctrl+/)

Disks

Extensions

Network interfaces

Size

Backup

Properties

Locks

Automation script

SCHEDULES

Auto-shutdown

MONITORING

Metrics

Alert rules

Diagnostics settings

Status

Off On

* Storage account

3785

<input checked="" type="checkbox"/>	Basic metrics	1h, 1m
<input checked="" type="checkbox"/>	Network metrics	1h, 1m
<input type="checkbox"/>	.NET metrics	1h, 1m
<input type="checkbox"/>	ASP.NET metrics	1h, 1m
<input type="checkbox"/>	SQL metrics	1h, 1m
<input type="checkbox"/>	Windows event system logs	Error
<input type="checkbox"/>	Windows event security logs	Error
<input type="checkbox"/>	Windows event application logs	Error
<input checked="" type="checkbox"/>	Diagnostics infrastructure logs	Warning
<input type="checkbox"/>	IIS logs	
<input type="checkbox"/>	Boot diagnostics	

For linux machines:



Virtual machine - Diagnostics settings

Save Discard

Search (Ctrl+/)

Disks

Extensions

Network interfaces

Size

Backup

Properties

Status

Off On

* Storage account

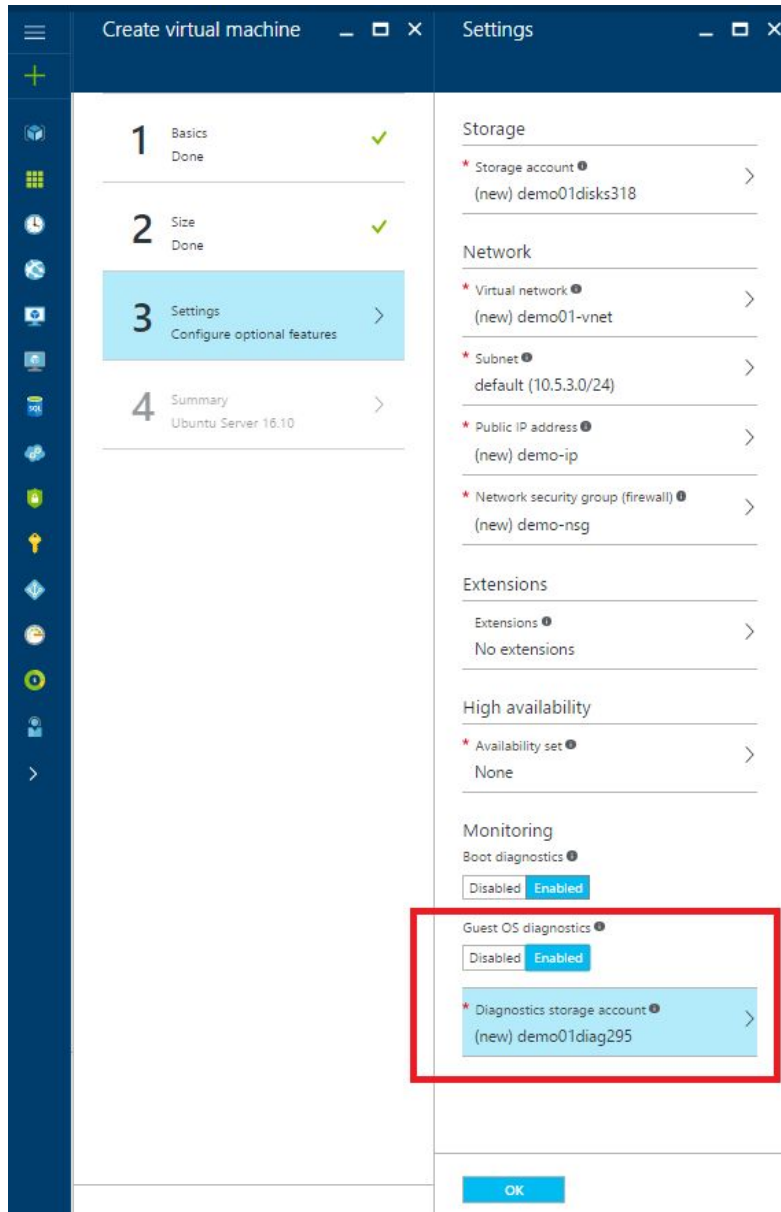
406

<input checked="" type="checkbox"/>	Basic metrics	1h, 1m
<input type="checkbox"/>	Boot diagnostics	

Setting up diagnostics for New VMs

When creating a new VM, then under Monitoring, ensure “Guest OS diagnostics” is enabled, and a suitable storage account is selected.

If this is not done at the time of creation, then see the above automated or manual steps for enabling diagnostics on existing VMs.



The screenshot shows the 'Create virtual machine' wizard in the Azure portal, specifically the 'Settings' step (Step 3 of 4). The left sidebar shows the progression: 1 Basics (Done), 2 Size (Done), 3 Settings (Current step), and 4 Summary (Ubuntu Server 16.10). The main content area is divided into two columns. The right column lists various settings: Storage (Storage account: demo01disks318), Network (Virtual network: demo01-vnet, Subnet: default (10.5.3.0/24), Public IP address: demo-ip, Network security group: demo-nsg), Extensions (No extensions), High availability (Availability set: None), and Monitoring. The Monitoring section includes 'Boot diagnostics' (Enabled) and 'Guest OS diagnostics' (Enabled). The 'Guest OS diagnostics' section is highlighted with a red box, showing a 'Diagnostics storage account' of demo01diag295. An 'OK' button is visible at the bottom right.

Step	Section	Status
1	Basics	Done
2	Size	Done
3	Settings	Configure optional features
4	Summary	Ubuntu Server 16.10

Storage

- * Storage account (new) demo01disks318

Network

- * Virtual network (new) demo01-vnet
- * Subnet default (10.5.3.0/24)
- * Public IP address (new) demo-ip
- * Network security group (firewall) (new) demo-nsg

Extensions

- Extensions No extensions

High availability

- * Availability set None

Monitoring

- Boot diagnostics Disabled Enabled
- Guest OS diagnostics Disabled Enabled
- * Diagnostics storage account (new) demo01diag295

OK