



Sample Dashboards

Cloud Insights

NetApp

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Dashboard Example: Virtual Machine Performance

There are many challenges facing IT operations today. Administrators are being asked to do more with less, and having full visibility into your dynamic data centers is a must. In this example, we will show you how to create a dashboard with widgets that give you operational insights into the virtual machine (VM) performance in your environment. By following this example, and creating widgets to target your own specific needs, you can do things like visualizing backend storage performance compared to frontend virtual machine performance, or viewing VM latency versus I/O demand.

About this task

Here we will create a Virtual Machine Performance dashboard containing the following:

- a table listing VM names and performance data
- a chart comparing VM Latency to Storage Latency
- a chart showing Read, Write and Total IOPS for VMs
- a chart showing Max Throughput for your VMs

This is just a basic example. You can customize your dashboard to highlight and compare any performance data you choose, in order to target for your own operational best practices.

Steps

1. Log in to Insight as a user with administrative permissions.
2. From the **Dashboards** menu, select **[+New dashboard]**.

The **New dashboard** page opens.

3. At the top of the page, enter a unique name for the dashboard, for example "VM Performance by Application".
4. Click **Save** to save the dashboard with the new name.
5. Let's start adding our widgets. If necessary, click the **Edit** icon to enable Edit mode.
6. Click the **Add Widget** icon and select **Table** to add a new table widget to the dashboard.

The Edit Widget dialog opens. The default name is "Widget 1" and the default data displayed is for all storages in your environment.

Widget 1

☐ Override dashboard time

Last 24 hours

✕

Virtual Machine

Filter by

+

Group by

Hypervisor name

✕

723 items found in 4 groups

Hypervisor name	Name ↑	Datstore	Hypervisor name	IOPS - Total (IO/s)	⋮	Latency - Total (ms)	⋮
+	us-east-1c (282)		us-east-1c	47.93		3.11	
+	us-east-1d (228)		us-east-1d	67.56		2.93	
+	us-east-1a (210)		us-east-1a	32.42		2.85	
+	us-east-1b (3)		us-east-1b	32.70		0.70	

Cancel

Save

1. We can customize this widget. In the Name field at the top, delete "Widget 1" and enter "Virtual Machine Performance table".
2. Click the asset type drop-down and change *Storage* to *Virtual Machine*.

The table data changes to show all virtual machines in your environment. For now, the table only shows the VM names.

3. Let's add a few columns to the table. Click the Gear icon on the right and select *Hypervisor name*, *IOPS - Total*, and *Latency - Total*. You can also try typing the name into the search to quickly display the desired field.

These columns are now displayed in the table. You can sort the table by any of these columns. Note that the columns are displayed in the order in which they were added to the widget.

4. For this exercise we will exclude VMs that are not actively in use, so let's filter out anything with less than 10 total IOPS. Click the **[+]** button next to **Filter by** and select *IOPS - Total*. Click on **Any** and enter "10" in the **from** field. Leave the **to** field empty. Click outside the filter field or press Enter to set the filter.

The table now shows only VMs with 10 or more total IOPS.

5. We can further collapse the table by grouping results. Click the **[+]** button next to **Group by** and select a field to group by, such as *Application* or *Hypervisor name*. Grouping is automatically applied.

The table rows are now grouped according to your setting. You can expand and collapse the groups as needed. Grouped rows show rolled up data for each of the columns. Some columns allow you to choose the roll up method for that column.

Virtual Machine Performance Table

☐ Override dashboard time

Last 24 hours

×

Virtual Machine

Filter by

IOPS - Total (IO/s)

>= 10

×

+

Group by

Hypervisor name

×

181 items found in 4 groups

Hypervisor name ↓	Name	Hypervisor name	IOPS - Total	Latency - Total (ms)
us-east-1d (62)		us-east-1d		1.94
us-east-1c (80)		us-east-1c		0.80
us-east-1b (1)	TBDemoEnv	us-east-1b	32.66	0.70
us-east-1a (38)		us-east-1a	121.22	0.81

Cancel

Save

1. When you have customized the table widget to your satisfaction, click the **[Save]** button.

The table widget is saved to the dashboard.

You can resize the widget on the dashboard by dragging the lower-right corner. Make the widget wider to show all the columns clearly. Click **Save** to save the current dashboard.

Next we will add some charts to show our VM Performance. Let's create a line chart comparing VM latency with VMDK latency.

1. If necessary, click the **Edit** icon on the dashboard to enable Edit mode.
2. Click the **[Add widget]** icon and select *Line Chart* to add a new line chart widget to the dashboard.
3. The **Edit Widget** dialog opens. Name this widget "VM / VMDK Max Latency"
4. Select **Virtual Machine** and choose *Latency - Max*. Set any filters you wish, or leave **Filter by** empty. For **Roll up**, choose *Sum by All*. Display this data as a *Line Chart*, and leave *Y-Axis* as *Primary*.
5. Click the **[+Query]** button to add a second data line. For this line, select *VMDK* and *Latency - Max*. Set any filters you wish, or leave **Filter by** empty. For **Roll up**, choose *Sum by All*. Display this data as a *Line Chart*, and leave *Y-Axis* as *Primary*.
6. Click **[Save]** to add this widget to the dashboard.



Next we will add a chart showing VM Read, Write and Total IOPS in a single chart.

1. Click the **[Add widget]** icon and select *Area Chart* to add a new area chart widget to the dashboard.
2. The Edit Widget dialog opens. Name this widget "VM IOPS"
3. Select **Virtual Machine** and choose *IOPS - Total*. Set any filters you wish, or leave **Filter by** empty. for **Roll up**, choose *Sum* by *All*. Display this data as an *Area Chart*, and leave *Y-Axis* as *Primary*.
4. Click the **[+Query]** button to add a second data line. For this line, select **Virtual Machine** and choose *IOPS - Read*.
5. Click the **[+Query]** button to add a third data line. For this line, select **Virtual Machine** and choose *IOPS - Write*.
6. Click **Show legend** to display a legend for this widget on the dashboard.



1. Click **[Save]** to add this widget to the dashboard.

Next we will add a chart showing VM Throughput for each Application associated with the VM. We will use the Roll Up feature for this.

1. Click the **[Add widget]** icon and select *Line Chart* to add a new line chart widget to the dashboard.
2. The Edit Widget dialog opens. Name this widget "VM Throughput by Application"
3. Select Virtual Machine and choose Throughput - Total. Set any filters you wish, or leave Filter by empty. For Roll up, choose "Max" and select by "Application" or "Name". Show the Top 10 applications. Display this data as a Line Chart, and leave Y-Axis as Primary.
4. Click **[Save]** to add this widget to the dashboard.

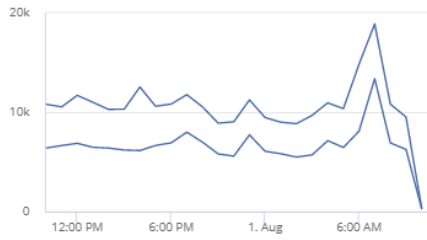
You can move widgets on the dashboard by holding down the mouse button anywhere in the top of the widget and dragging it to a new location.

You can resize widgets by dragging the lower-right corner.

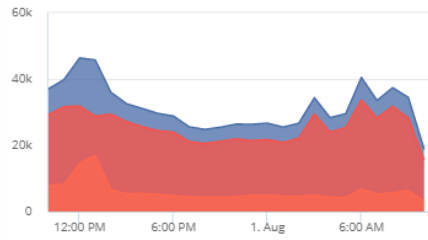
Be sure to **[Save]** the dashboard after you make your changes.

Your final VM Performance Dashboard will look something like this:

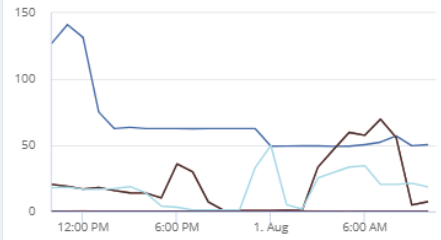
VM / VMDK Total Max Latency



VM IOPS



VM Throughput Top 10 by Application



VM Performance Table

146 items found in 3 groups

<input type="checkbox"/> Hypervisor name	Name ↑	Hypervisor name	IOPS - Total (IO/s)	Latency - Total (ms)
<input checked="" type="checkbox"/> us-east-1c (65)		us-east-1c	185.84	2.04
<input checked="" type="checkbox"/> us-east-1d (51)		us-east-1d	90.00	1.81
<input checked="" type="checkbox"/> us-east-1a (30)		us-east-1a	86.84	1.00

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